

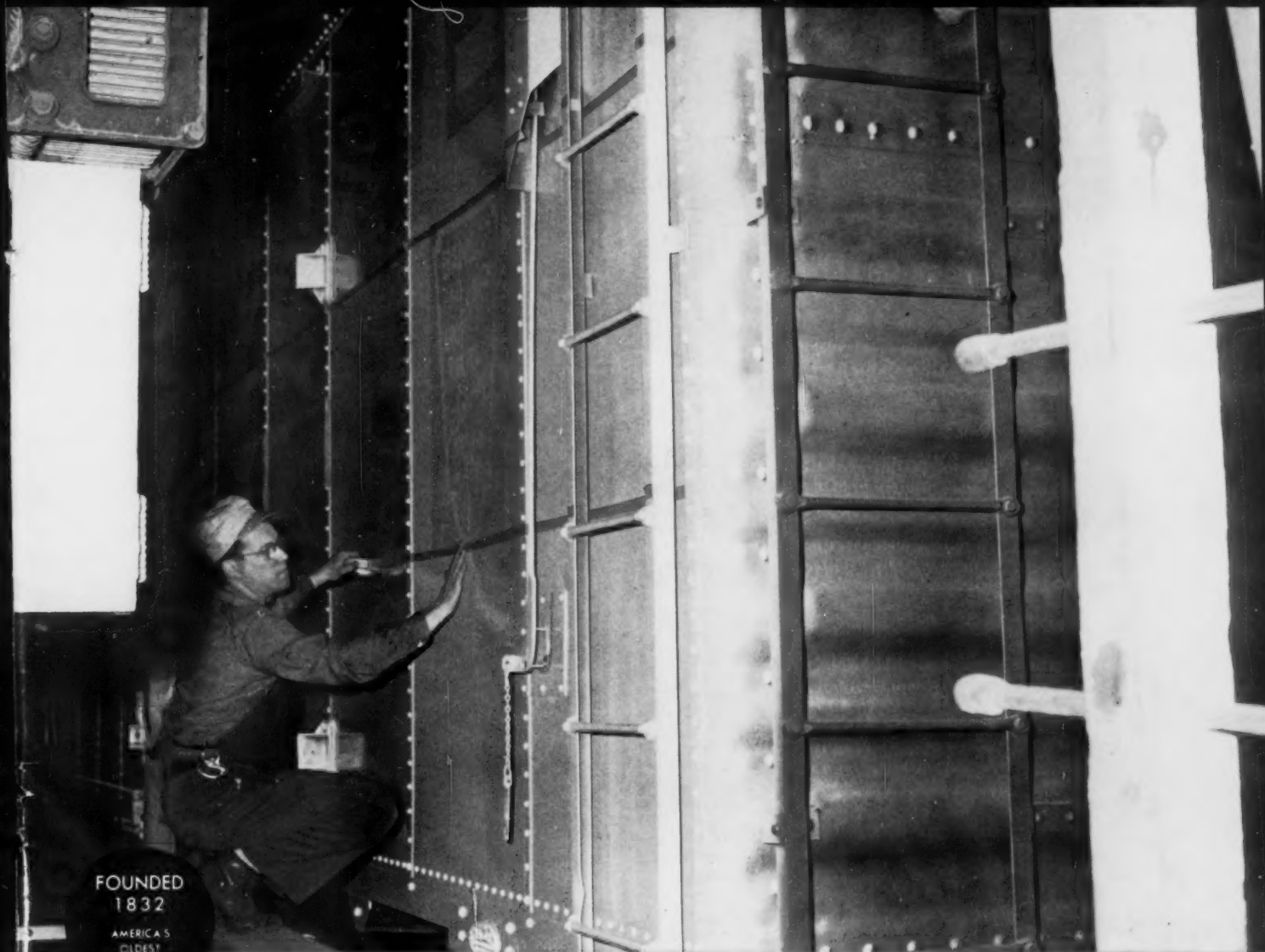


RAILWAY

LOCOMOTIVES AND CARS

A SIMMONS-BOARDMAN TIME-SAVER PUBLICATION

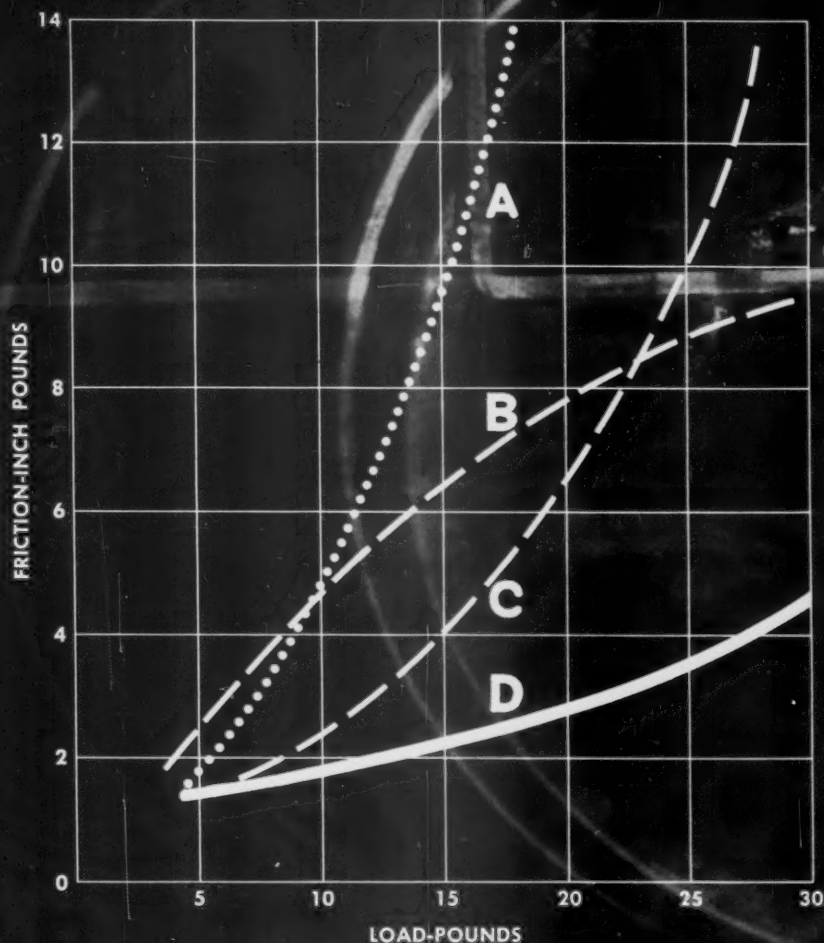
JULY 1958



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1832

AMERICA'S
OLDEST
TRADE PAPER

How Bangor & Aroostook Keeps Its Freight Cars Attractive . . . Page 15



NEW PROTECTION AGAINST HOTBOXES: Texaco Car Oil 1960 HD (D) offers far less friction at every loading than AAR car oil (A) or either of two competitive premium car oils (B and C).

New Texaco Car Oil 1960 HD cuts bearing friction at least 50%

Texaco Car Oil 1960 HD is a new product designed to lubricate even at those critical times when ordinary car oils don't give enough protection.

Rigid testing has proved the exceptional anti-friction characteristics and load-carrying capacity of this new Texaco lubricant. As curve "D" on the chart indicates, for example, a bearing lubricated with Texaco Car Oil 1960 HD offers only 3 inch-pounds of friction under a 20-lb. load—over 50% less than an identical bearing lubricated with the finest alternative product. In terms of actual service, this means lower bearing temperatures and fewer hotboxes.

Already drastically cutting hotbox rate on many railroads, Texaco Car Oil 1960 HD can do the same for your operation. Call your Texaco Railroad Lubrication

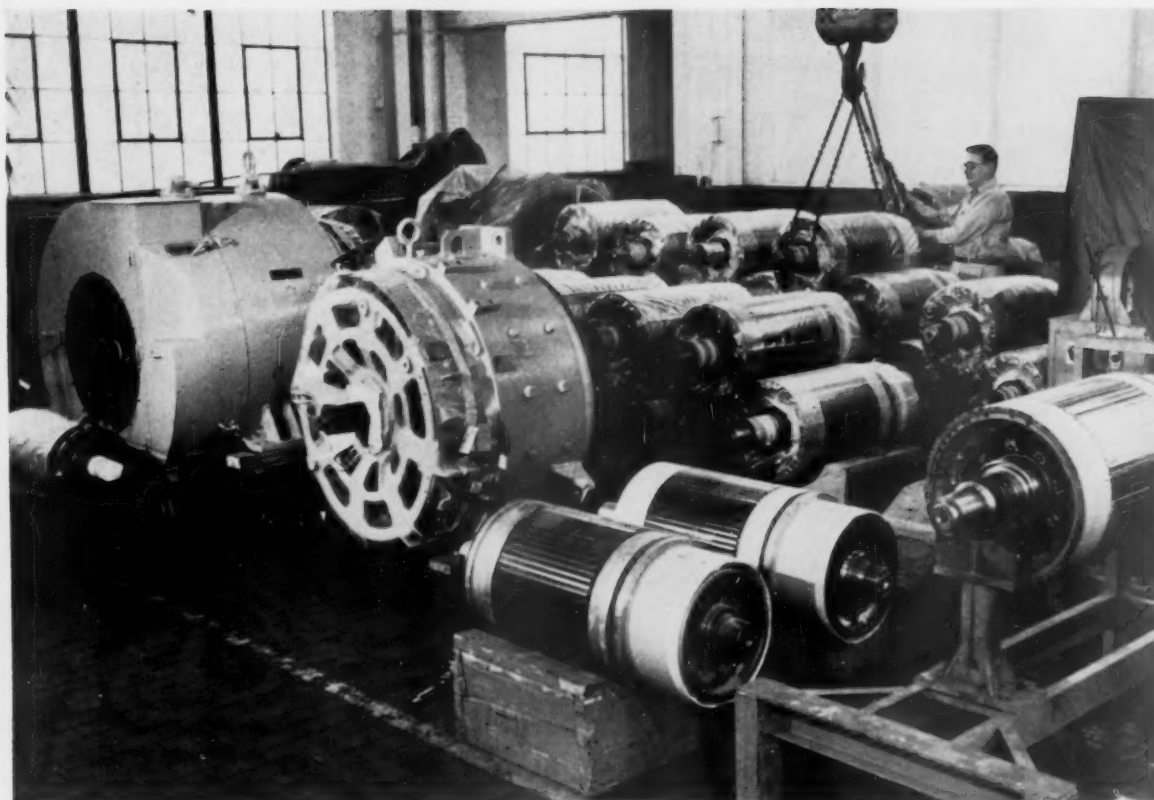
Engineer for a complete report on Texaco Car Oil 1960 HD, or write:

The Texas Company, *Railway Sales Division*, 135 East 42nd Street, New York 17, N. Y.



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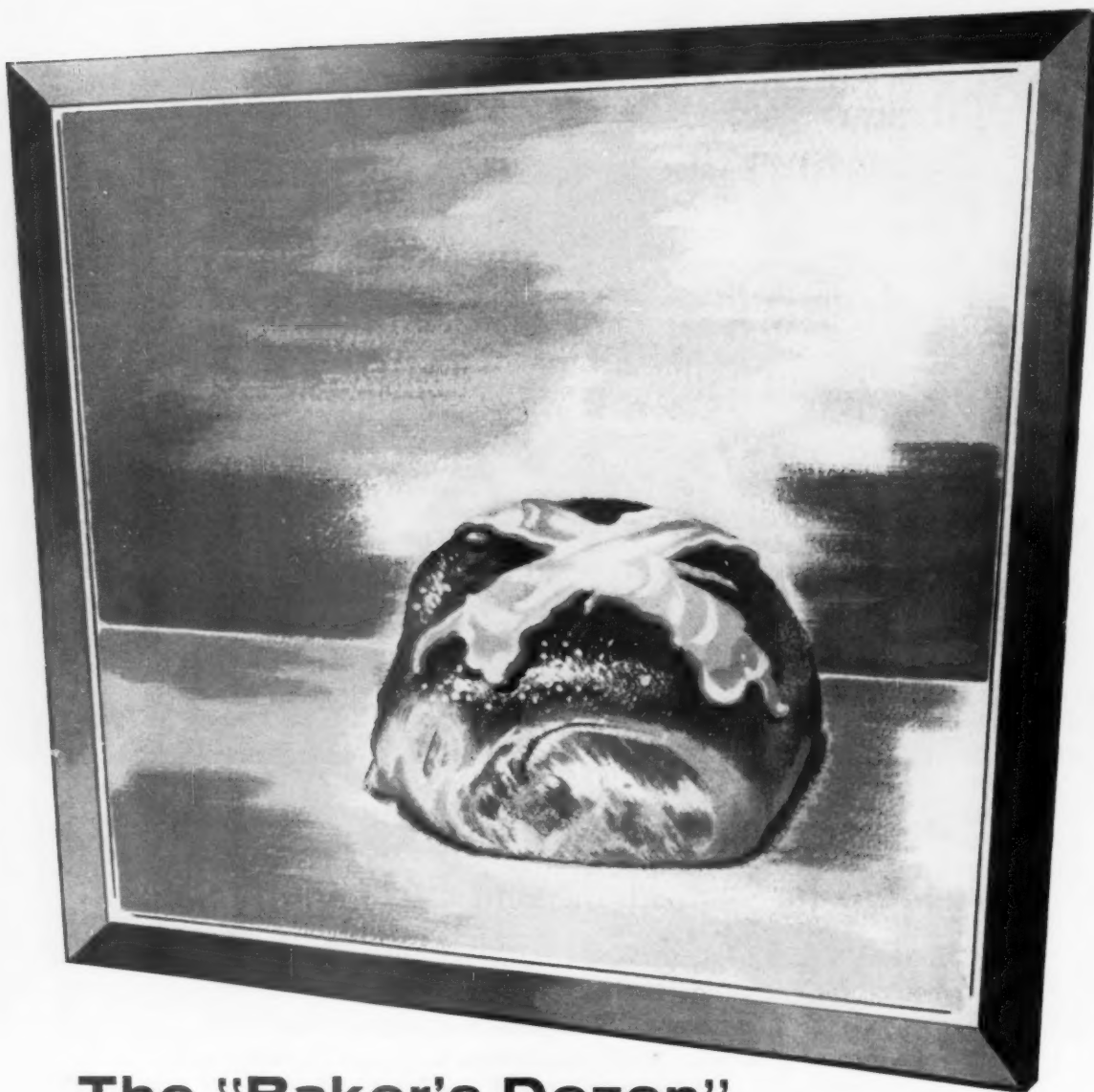
For complete details on how National can help you solve your electrical maintenance problems, just call your nearby National field engineer or drop us a line.

NATIONAL ELECTRIC COIL COMPANY

COLUMBUS 16, OHIO, U. S. A.



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REDESIGNING AND REPAIRING OF ROTATING ELECTRICAL MACHINES



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This happy practice hasn't died out completely. Many fine firms take very real satisfaction today in giving a baker's dozen in terms of product quality and company service—making it pleasant and profitable to deal with them.

When Adlake started a century ago the philosophy of the baker's dozen was the expected pattern of business. We like to think that we have remained old-fashioned in that one respect.



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Manufacturers of Adlake Specialties and Equipment for the Railroad Industry

RAILWAY

LOCO- MOTIVES AND CARS

The Oldest Trade Paper
In the United States

JULY 1958—VOL. 132 NO. 7

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REPORT FOR JULY

Transport Act OK's Equipment Loan Guarantees

Government guarantees for loans to railroads enabling them to "finance or refinance the acquisition or construction of equipment or additions and betterments . . . for operating expenses, working capital, and interest on existing obligations" seemed assured in final passage of the Transportation Act of 1958. Other provisions include greater freedom in rate making and train service adjustments. Variations in House and Senate versions were reconciled in a joint conference committee. As originally introduced, the bills would guarantee up to \$200,000,000 in loans for rolling stock.

Section of Brake Rigging Specification Changed

The AAR has advised certain changes in the section "Brake Rigging" on page 23 of the November 1956 issue of Specification No. 2518—Installation of AB Freight Car Brake Equipment. The items included under this heading with respect to requirements for brake rigging design on the basis of brake cylinder pressure of 100 psi will be held in abeyance and recert to the pressure requirement of 80 psi until further investigation can be made.

The 80-psi brake cylinder pressure represents a minimum standard for design purposes, however, it does not restrict any railroad or builder from using 100 psi if they prefer to do so.

New Haven Retiring Two Lightweight Trains

The New Haven is retiring two of its three lightweight trains—the 383-seat "Dan'l Web-

ster" and the 467-seat "John Quincy Adams." The trains, after a little more than a year's experimental service, are going into yards to await better times.

The General Motors "Aerotrains" are also temporarily out of service at the EMD plant in La Grange, Ill.

Alternate Standard Lubricator Swab

A new design felt lubricator swab, part #0303, has been approved by the AAR as a correct substitution for the standard arrangement of the three metal rings and associated parts in the repair and maintenance of old style non-pressure heads of AB brake cylinders.

Before applying the swab, it must be soaked in oil, AAR Spec. M-906, and the surfaces of the swab cavity must be liberally coated with brake cylinder lubricant, AAR Spec. M-914.

The AAR advises that three manufacturers now have approved swabs and their names will be furnished on request.

Orders and Inquiries For New Equipment

Since the closing of the June issue, the Atchison, Topeka & Santa Fe has ordered 100 50-ft 6-in DF box cars from its Topeka shop. Trailer Train Company has ordered 200 50-ft piggyback flat cars from the Altoona shops of the Pennsylvania. Delivery is expected to begin in August. TTX is currently testing a tiedown stanchion developed by Pullman-Standard and applied to a Great Northern flat car. Meanwhile, some 85 50-ft cars now in TTX ownership are being equip-

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TIME SAVING IDEAS IN THIS ISSUE

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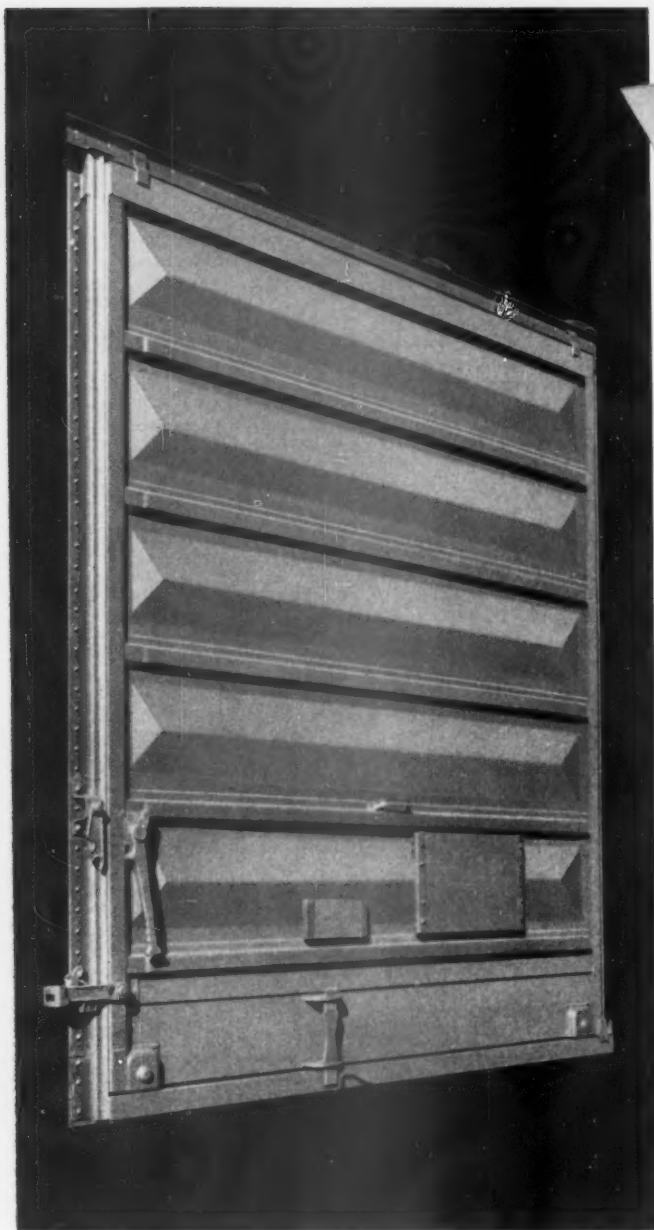
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P-S Box Car Side Doors



**This booklet will
give you the facts
...write for it**

Every pertinent fact regarding operating characteristics, strength and durability, maintenance ease and simplicity, lading protection qualities and laboratory and service testing of the P-S Box Car Side Door is included in this to-the-point booklet. Write for a copy now . . . study it . . . compare this door to any on the market. And when you do, no matter what comparisons you make—economy, durability, lading protection—you'll find the Pullman-Standard Box Car Side Door offers the best value to your railroad.

PULLMAN-STANDARD

CAR MANUFACTURING COMPANY

200 S. MICHIGAN AVE., CHICAGO 4, ILLINOIS

BIRMINGHAM, PITTSBURGH, NEW YORK, SAN FRANCISCO



***SURE and
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Yellow Strand Braided Safety Slings

You're sure with Yellow Strand Braided Safety Slings on your equipment. These slings combine strength and flexibility to provide safety and ease of handling.

There's a Yellow Strand Sling designed to handle any load on your railroad from a highly polished crankshaft to a Diesel locomotive. Write us today and tell us the size, weight and nature of your problem lift. Our engineers will design a sling to exactly meet your needs! Broderick & Bascom Rope Co., 4203 Union Blvd., St. Louis 15, Mo.

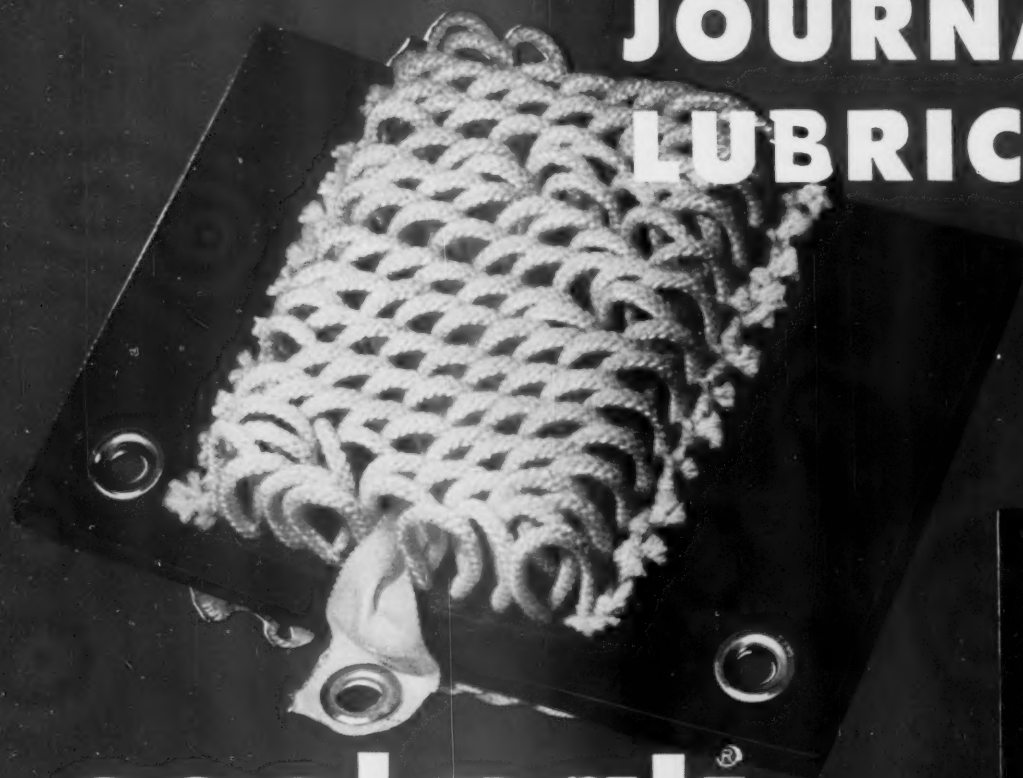
Yellow Strand[®]

WIRE ROPE

Announcing

a completely-new, revolutionary

JOURNAL LUBRICATOR



cool-pak®

...WITH SUPER-RESILIENT, OIL-THIRSTY WICKS

ASSURES CONSTANT FLOW
OF OIL TO THE JOURNAL



Sectioned view with loop cut away
to show stainless steel center core

**forecasts new performance records
...lower cost per car per year!**

Created after nearly three years of research and experimentation—Cool-Pak® is a major breakthrough in journal lubrication. Cool-Pak is all-new—in materials, design and construction. In fact, its construction is a complete departure from conventional lubricators—utilizing scientifically-designed resilient wicks for instantaneous oil delivery.

Cool-Pak has limited approval for test by the A.A.R. for interchange service. Road tests from Texas to Canada give promise of shattering all previous performance records in long life and dependable journal lubrication mile-after-mile, year-after-year, and in all kinds of weather.

NEW DIMENSIONAL STABILITY—Two layers of wool felt provide a superior oil reservoir. The felt has durability to withstand impact. And it

acts as a filter so that only clean oil is transmitted. Oil-thirsty nylon, wool and cotton wicking cables threaded all the way through the oil-saturated layers and extending 2½ inches above the felt—drink up the oil and deliver it to the journal instantly and continuously.

CONSTANT JOURNAL CONTACT—The wicking cables are engineered and constructed to transmit oil over the entire length of the journal. Continuity is assured by the 21-strand, self-lubricating, stainless steel center core which holds the loops upright and provides a super-resilient, fast-recovery action insuring constant journal engagement and lubrication.

DEPENDABLE IN ALL KINDS OF WEATHER—The road tests from Texas to Canada have demonstrated that journal boxes with Cool-Pak lubricators run cooler in high temperature areas, and provide dependable lubrication in extremely cold climates. One test-report states that "Cool-Pak provides uniform pressure against the journal at all temperature extremes in the North American Continent."

COOL-PAK—PATENT APPLIED FOR

UNI-PAK CORPORATION

SWISSVALE, BOX 8302, PITTSBURGH 18, PENNSYLVANIA

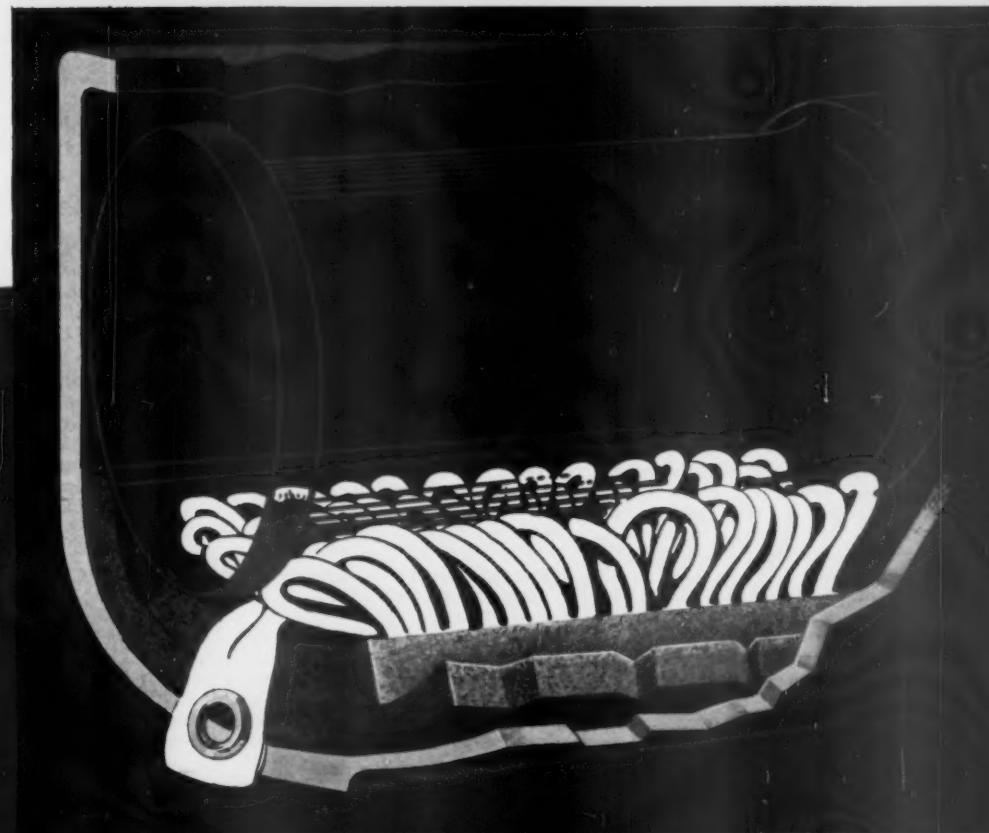
OFFICES: New York, 366 Madison Ave.; Chicago, 120 So. La Salle St. PLANT: Pittsburgh 21, Pa., 1213 Belmont St.

REPRESENTATIVES: Philadelphia, Cleveland, St. Paul, Houston, San Francisco, Montreal Canada,
St. Louis, Richmond, Baltimore, Dallas, Washington, Louisville

This end view of Cool-Pak in the journal box shows how the $\frac{1}{4}$ " to 1" oil level assures oil saturation of both layers of felt, and the resilient, oil-thirsty wicks which are threaded through the felt and extend upward in rapid-wicking loops that maintain constant contact with the journal.



A cut-away view of Cool-Pak installed in a standard A.A.R. Journal box illustrates how the wicking loops provide efficient distribution of oil along the entire length of the journal. Cool-Pak contacts both collar and fillet but avoids sharp edges of both — assuring superior engagement.



Ask for New Bulletin
Gives complete engineering data. Illustrates ease and rapidity of Cool-Pak installation and removal.

cool-pak[®]

A RADICALLY-NEW, THOROUGHLY-TESTED DESIGN FOR POSITIVE JOURNAL LUBRICATION

REPORT FOR JULY—Continued from page 5

ped with the ACF stanchion at Altoona. The *Western Pacific* has ordered four Airslide hopper cars at \$12,700 each from General American for delivery during the third quarter of this year.

The Trane Company will provide complete refrigeration systems for the 25 dual purpose cars which Pacific Car & Foundry is building for the *Northern Pacific*, as reported in the May issue. The 10-ton Trane systems will hold temperatures anywhere from zero to 70 deg, permitting the cars to carry both frozen and perishable food commodities.

Miscellaneous Publications

SAFETY IN WELDING AND CUTTING. A complete revision of the AWS-ASA Z49 standard prepared for the protection of persons from injury and illness and the protection of property from damage by fire and other causes arising from welding and oxygen cutting equipment, its installation, operation

and maintenance. Specific provisions included for gas welding, shielded metal-arc welding, submerged arc welding, inter-gas metal-arc welding, brazing and resistance welding.

American Welding Society, 33 West 39th st., New York 18. Price, \$2.

MANUAL ON MEASUREMENT AND SAMPLING OF PETROLEUM AND PETROLEUM PRODUCTS. 172-page manual contains ASTM methods required to measure and compute amount of oil in storage and transportation tanks and for obtaining typical samples of tank contents. *American Society for Testing Materials, 1916 Race st., Philadelphia 3. Price, \$3.50.*

"INSULATION ENGINEERING FUNDAMENTALS." 117-page book describes every phase of insulation from basic concepts, selection, application, construction and testing for large and small rotating machinery and electronic equipment. Contains also a glossary of insulation words and phrases. *Westinghouse Electric Corporation, Box 2278, Pittsburgh. Price, \$2.75.*

Personal Mention

Atlantic Coast Line—Florence, S. C.: A. L. WATERS appointed diesel foreman; T. S. CROMER, assistant diesel foreman, and J. T. SCHORB, foreman. *Waycross, Ga.:* G. F. MOURO, JR., appointed assistant enginehouse foreman; L. A. SPENCER, general mechanical inspector, and A. L. RINEHART, assistant erecting foreman. *Sanford, Fla.:* M. E. SMITH appointed road foreman of engines. *Ocala, Fla.:* H. V. NELSON, JR., appointed road foreman of engines.

Boston & Maine—Boston: CLARENCE W. McELROY, assistant master mechanic, appointed master mechanic, succeeding EVERETT H. BURNEY, retired.

Canadian National—Montreal: G. M. HARDING appointed superintendent of training (mechanical), succeeding L. H. BEXON, retired. W. H. CYR, research engineer, succeeds Mr. Harding as chief mechanical engineer.

Chesapeake & Ohio—Richmond, Va.: S. M. EHRLMAN appointed assistant general superintendent car department, succeeding B. J. RUCKER, retired. E. J. HENSHAW succeeds Mr. Ehrman as assistant to general superintendent car department. *Walbridge, Ohio:* J. D. SCHLINK, general foreman, assumes jurisdiction over both locomotive and car departments. Position of general foreman car department held by Mr. Henshaw abolished.

Duluth, Winnipeg & Pacific—West Duluth, Min.: A. J. MYRE, assistant car foreman, appointed car foreman.

Florida East Coast—S. Augustine, Fla.: GORDIE

STEWART appointed assistant chief operating officer. E. H. SCHOEDINGER appointed assistant chief mechanical officer, succeeding Mr. Stewart. *Buena Vista, Fla.:* JOHN SIMS, assistant master mechanic, appointed master mechanic, succeeding Mr. Schoedinger.

Illinois Central—Centralia, Ill.: R. D. ELLIS appointed master mechanic, succeeding J. M. JEFFREY, retired.

Minnesota Transfer—St. Paul Minn.: LARRY E. MARTIN, road foreman of engines, appointed master mechanic, succeeding ROBERT D. MARK, retired.

Nevada Northern—East Ely, Nev.: A. P. CAHILL appointed master mechanic, succeeding G. F. LAKE, retired.

New York Central—New York: R. T. TOMLINSON temporarily appointed lubrication engineer. J. M. LOGAN appointed supervisor sleeping-car maintenance.

Norfolk & Western—Columbus, Ohio: E. C. CROWDER, JR., appointed general foreman, succeeding E. W. MEREDITH, retired. *Williamson, W. Va.:* A. L. WOOTEN appointed day roundhouse foreman, succeeding Mr. Crowder. Mr. Wooten formerly roundhouse foreman at Columbus.

St. Louis Southwestern—Commerce, Tex.: D. T. HOPKINS, assistant road foreman of engines, appointed road foreman of engines.

Southern, Richmond, Va.: W. B. COOK appointed general foreman.

Supply Trade Notes



John W. Scallan



James B. Swindell

PULLMAN-STANDARD CAR MANUFACTURING COMPANY.—John W. Scallan elected president, succeeding Charles W. Bryan, Jr., retired.

Mr. Scallan, a graduate of Notre Dame (1925), worked one year on a Chicago newspaper, then joined the Pullman Company. Two years later entered sales department of Pullman-Standard. Became vice-president-sales, and in January 1953 vice-president and general manager.

Headquarters of Pullman-Standard now at 200 South Michigan avenue, Chicago 4.

GENERAL STEEL CASTINGS CORPORATION.—W. Ashley Gray, Jr., and Lawrence P. White appointed managers of western and eastern sales of railroad products and industrial castings at Granite City, and Eddystone, respectively.

JOHN A. ROEBLING'S SONS CORPORATION.—Earl A. Frazier appointed Seattle district sales manager, and John P. Kadlic, New York district manager, Wire Rope and Aircord Division, succeeding Mr. Frazier. Mr. Kadlic formerly in charge of wire rope sales, Philadelphia district.

SPECTROCHEMICAL LABORATORIES, INC.—Operations moved to new headquarters at 8359 Frankstown avenue, Pittsburgh 21.

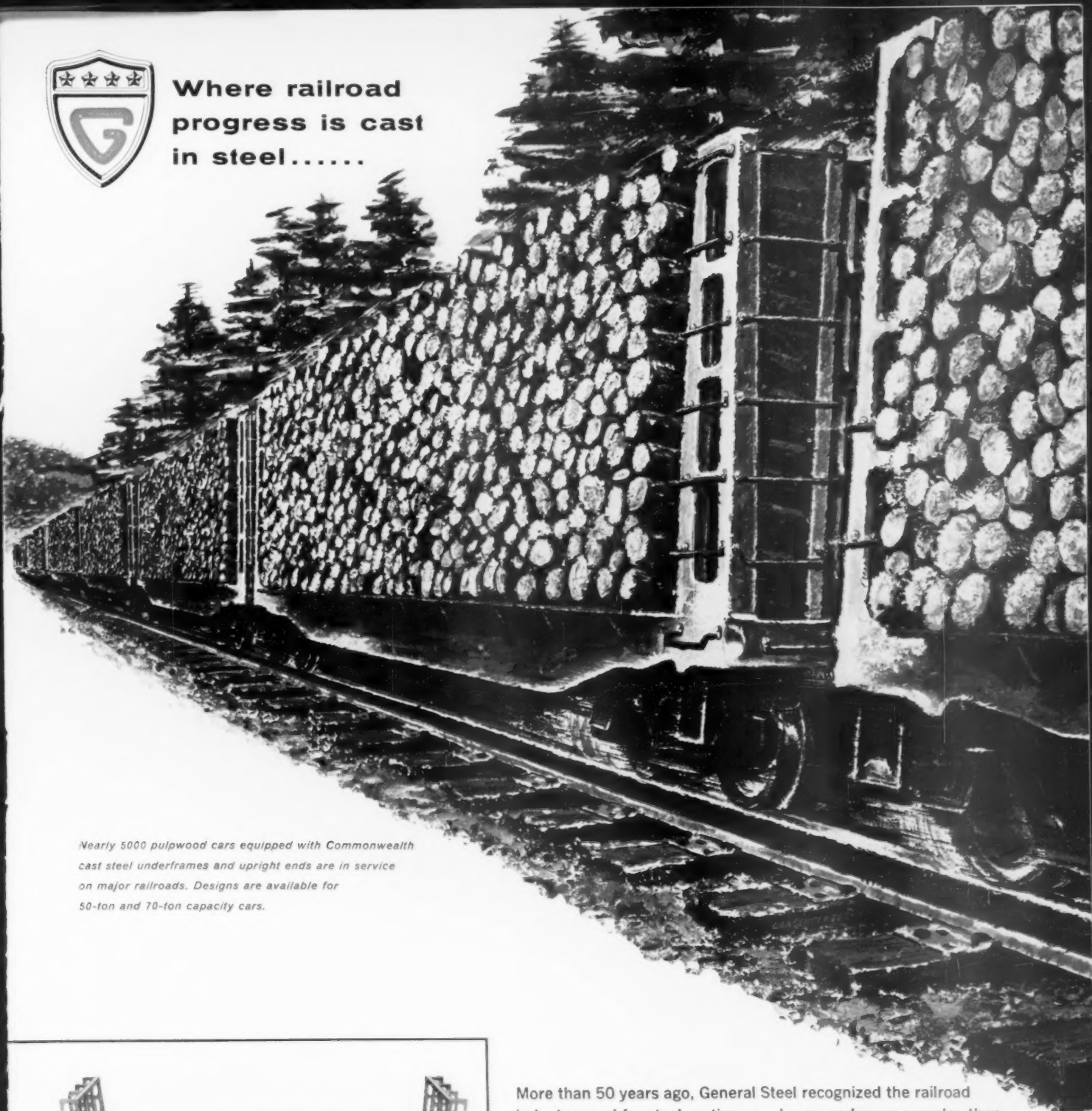
ROLIN CORPORATION.—Chicago office moved to Inland Steel Building, 30 W. Monroe street, Chicago 3.

KW BATTERY COMPANY.—A Coordinated Products Division established to better serve the demand for allied products, including battery chargers.

(Turn to page 48)



**Where railroad
progress is cast
in steel.....**



*Nearly 5000 pulpwood cars equipped with Commonwealth
cast steel underframes and upright ends are in service
on major railroads. Designs are available for
50-ton and 70-ton capacity cars.*



*Commonwealth cast steel underframe and interlocking
upright ends simplify pulpwood car construction; provide
greater strength, permit easier loading, maximum capacity.*

More than 50 years ago, General Steel recognized the railroad industry need for steel castings . . . larger and more complex than ever before conceived.

Advanced engineering and production techniques developed through its pioneering have made General Steel a unique supplier to today's railroads. Its Commonwealth one-piece products . . . for freight cars, passenger cars and locomotives . . . utilize cast steel's great strength at minimum weight, exceptional ruggedness and freedom from maintenance to cut operating expenses for users throughout the world.

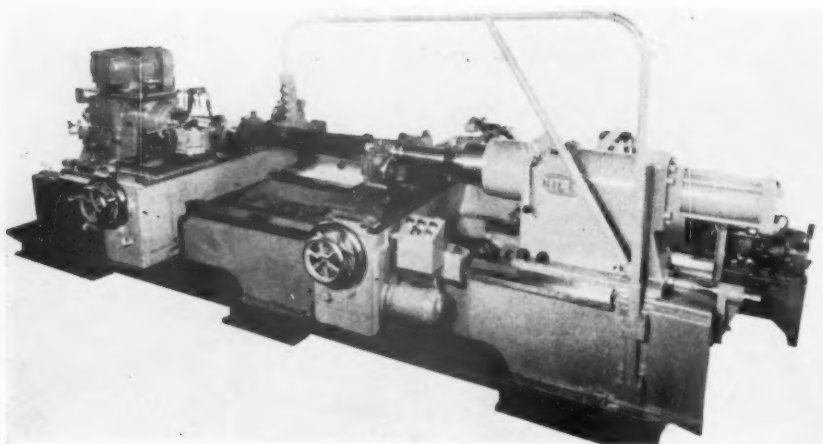
Plan wisely for the future . . . invest in Commonwealth products.

GENERAL STEEL CASTINGS

● GRANITE CITY, ILL. • EDDYSTONE, PA. • AVONMORE, PA.



LOCOMOTIVES AND CARS WHAT'S NEW IN EQUIPMENT



Axle Journal Lathe

This axle journal lathe is a double-carriage, single-end drive type which can be supplied as a straight axle lathe that also can provide contour profiling, or as a journal lathe that also can be used as an axle lathe. The lathe can machine car wheel sets and unmounted axles, diesel locomotive wheel sets with drive gear attached, and unmounted diesel axles.

On mounted wheel sets, it will turn and burnish end collars, journals, and dust guard seats. For axles, the wheel seats can also be turned and burnished.

This lathe has independently controlled electronic feeds, hydraulically actuated quill, hydraulic pressure opposed burnishing, single-end drive and four selections of speed range. Independently controlled feeds permit returning the carriage immediately at completion of one job to make a fast start on a new job. Hydraulic quill actuation provides fast operation and fewer moving parts than screw actuation of the entire tailstock. This lathe's tailstock does not travel. Only the quill travels. This reduces wear and eliminates poor adjustment which occurs after extensive op-

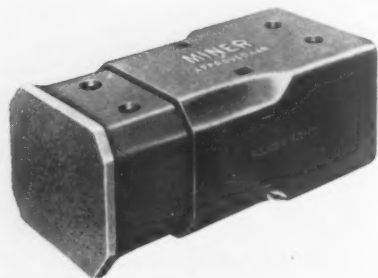
eration of conventional designs. Hydraulic pressure forces the wheel sets against a collapsible spring-loaded center on the headstock. When the center collapses, the set locks against the serrated-face driver plate.

Use of a single-end drive eliminates the problems of synchronizing two drives, cuts wear on the work piece by eliminating the twist created by two drives and eliminates the possibility of chatter in the work piece. Four spindle speed options are available, for straight carbides or for high-speed steel tools and burnishing: 200 rpm with constant-speed a-c motor, 100 to 200 rpm with adjustable-speed d-c motor, 100 and 200 rpm with two-speed a-c motor, and 50 to 200 rpm with variable-speed d-c motor. The headstock drive consists of a V-belt directly driving a worm gear.

The two carriages, each with hand cross feed for turning and power cross-hydraulic pressure for burnishing plus hand and power longitudinal feed and rapid traverse, are driven by pinion drive at the center of the bed.

Extra equipment includes coolant system, tool holder for high-speed form tools, driver plates for two special axle sizes, and sets of stellite burnishing rolls. An automatic loading device is available for pit-mounted lathes.

The lathe bed length is 18 ft; center height from floor line, 46 in., and bed width, 40 in. Swing is 45 in. and accommodates maximum wheel diameter of 42 in. *Machine and Railroad Tools Dept., Hamilton Div., Baldwin-Lima-Hamilton Corp., Dept. RLC, Hamilton, Ohio.*



Rubber Draft Gear

The Class FR-19 Rubber Draft Gear provides an improved arrangement which permits the use of more rubber units than used in previously certified Miner gears. Increased capacity results. Ultimate pressures have been maintained at a low level. Proper initial compression provides slack-free operation of cars with positive and full-time protection for lading, cars and attachments.

The FR-19 gear is fully enclosed and held as a self-contained unit, without bolts, by a special locking feature. To permit easy ap-

plication to the draft gear pocket, inserts are placed in the locking arrangement during gear assembly to reduce the length of the gear prior to shipment.

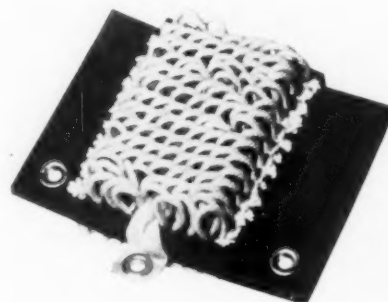
The gear is 24 3/8 in. long and, therefore, no follower plates are necessary for application to the car. The FR-19 gear has AAR approved. *W. H. Miner, Inc., Dept. RLC, Chicago.*

Dye Penetrant Inspection Materials

Spotcheck dye penetrant inspection materials made from chlorinated hydrocarbons are now available in non-flammable or very-high flash-point formulas in either pressure-spray cans or bulk. The spray can provides a convenient dye inspection method for locating cracks, seams, porosity and other defects open to the surface in almost any solid material.

According to the manufacturer, the materials are non-toxic. However, their use in reasonably ventilated areas is advised. The formulas are available in 12-oz pressure-spray cans, and quart, gallon and 5-gal cans, and 55-gal drums.

Spotcheck penetrant and developer are now available in new water-wash formulas for quick and thorough removal by water spray. *Magnaflux Corporation, Dept. RLC, 7300 West Lawrence ave., Chicago 31.*



Journal Lubricator

The Cool-Pak lubricator, a departure from previous models, is based on a "resilient wicks" principle which is said to keep wicking surfaces in contact with the journal throughout the minus 60 to 130 deg F temperature range. Cool-Pak is composed of a two-layer felt base 2 in. thick and a series of 110 to 180 wick, depending on lubricator size. In the center of each wick is a 21-filament stranded stainless-steel wire. By spring action, the self-lubricating wires hold the wicks against the

(Continued on page 54)



SHORT RUN... OR LONG HAUL

You'll always get top performance from your diesels when you use Esso Diesel Fuel. Many years of experience backed by laboratory and on-the-road testing have combined to produce high quality Esso Diesel Fuels for every type of railroad requirement—for switching, heavy duty passenger and freight diesel locomotives...for diesel-powered maintenance of way machinery...for roadbed construction equipment. With outstanding distribution of bulk storage throughout the Esso area, the right grade is always available to fill your specific needs. For the full story on dependable, high-quality Esso Diesel Fuels or the complete line of Esso Railroad Products, call your local Esso office, or write: Esso Standard Oil Co., Railroad Sales Division, 15 West 51st St., New York 19, N. Y.

ESSO DIESEL FUEL

ESSO RESEARCH works wonders with oil



RAILROAD PRODUCTS

HOW SOLID BEARINGS AND JOURNAL STOPS HELP KEEP RAILROADS OUT OF THE RED

It's a fact...

that MAGNUS R-S JOURNAL STOPS
can cut the cost of routine
bearing inspection
to less than
7 cents per car per day



*With this and other cost reductions, Journal Stops
can save you about \$35 a year on every freight car!*

PACKING seldom needs adjustment when R-S Journal Stops are applied. That's why they can cut car oiler's time in half, reduce annual journal-box servicing costs to \$24.11—only 6.6 cents per day.

But that's not all. When you stabilize the solid bearing assembly with R-S Journal Stops, practically all other bearing operating costs are reduced too. In fact railroads using Journal Stops report total savings of about \$35 a year on each car.

Journal Stops prevent displacement of bearing and wedge under impact and braking forces—help provide uniform, uninterrupted oil film lubrication, give the solid bearing a chance to work at optimum efficiency *all the time*. They double bearing life, reduce wheel flange wear, prevent dust guard damage, cut truck maintenance all along the line.

Today there are more than 7,000 freight cars equipped with R-S Journal Stops. In service, they have increased hot box mileage 10 times—cut hot box costs to a tenth of current costs on

similar cars in similar service. That means less than ⅓ cent per car per day to cover all costs associated with bearing road failures.*

Yes—this is the low-cost solution to the hot-box problem. A solution that retains all the inherent advantages of standard AAR solid journal bearings. For *all* the facts, write to Magnus Metal Corporation, 111 Broadway, New York 6, N.Y., or 80 E. Jackson Blvd., Chicago 4.

*Cost based on data compiled by the Mechanical Division of the Association of American Railroads in 1955.

MAGNUS
Solid Bearings



*Right for Railroads
...in performance...in cost*

MAGNUS METAL CORPORATION *Subsidiary of* **NATIONAL LEAD COMPANY**

LOCOMOTIVES AND CARS

JULY

1958



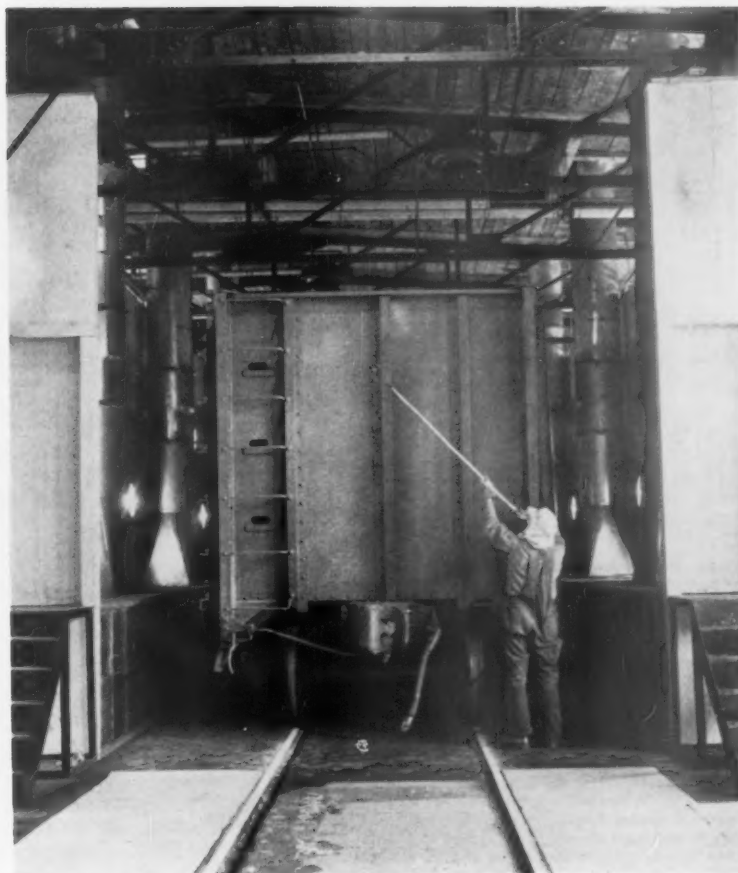
Blue-White-Red



Bright Red



Reefer Yellow



Freight Car Red

Colorful Car Fleet Will Stay That Way

Bangor & Aroostook has a production line for its freight car painting

THE BANGOR & AROOSTOOK'S 4,677 freight cars probably present more diversified painting problems than the car fleets of most larger railroads. BAR management is convinced of the advertising potential of its freight cars. Most distinctive and best known by railroaders everywhere are the 1,350 blue-white-red box cars with their "State of Maine Products" legend.

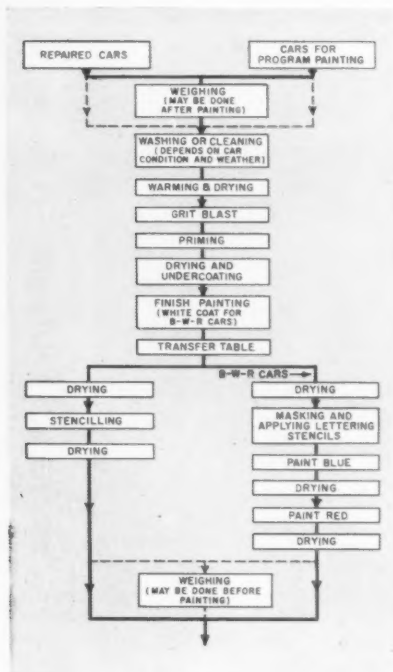
But, that's not all. Actually the rail-

road has five different basic paint schemes. There are the blue-white-red cars (regular and insulated boxes). The road has 1,390 yellow refrigerator cars. Approximately this same number of cars are painted standard freight-car red (box, gondola, flat and pulpwood cars). Bangor & Aroostook owns 199 black-hoppers. And finally, the road has just begun the repainting of approximately 200 of the blue-white-red box cars with

a bright new all-red paint arrangement.

Because management is so interested in the appearance of its cars, the mechanical department is confronted with the problems of putting an automobile-quality finish on them. It is realized that such a finish—in fact, any paint—does not last indefinitely. Without cleaning, brightly colored cars soon lose their value as rolling advertisements. Two things are done. Freight cars are washed

Production Line Painting . . .



Bangor & Aroostook has successfully integrated custom blue-white-red painting with more conventional solid-color arrangements on its production line.

ON OUR COVER

Most elaborate freight-car painting done by Bangor & Aroostook is that of its distinctive blue-white-red "State of Maine Products" cars. In lower view, stencils and masking are being applied over dried white enamel prior to application of blue and red. At the top are the same cars being washed at Northern Maine Junction.

regularly at Northern Maine Junction; and the BAR has always authorized regular painting programs for all types of equipment.

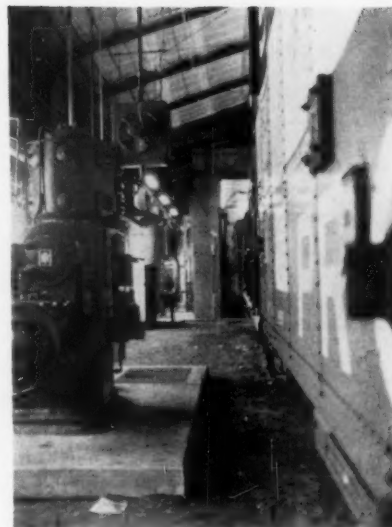
Recently, the road took the biggest step yet in its "good looks" campaign. Since late in 1957, the Bangor & Aroostook has been operating a \$300,000 production-line paint installation at its Derby, Me., shop. Along with being the most important link in keeping the car fleet attractive, the new paint shop will keep refinishing costs down, and will lengthen both the life of the paint on the cars and the service lives of the cars.

The road has been operating on a six-to seven-year painting cycle. With its present ownership of 4,677 revenue cars, it necessitates the repainting of over 600 cars per year. This painting load is further increased by the necessary refinishing of cabooses and other non-revenue equipment.

The 600 cars-per-year painting goal requires the refinishing of three cars per day, and that is the typical output of this new shop. At the same time, facilities are available to step this up to a four-per-day rate.

Complete Protection

Weather in northern Maine prevents any outdoor painting for about six months of the year, and low temperatures make not only protection, but heat essential for any type of successful painting. When the BAR painted cars outdoors, at least 20 per cent of the working days were lost because of rain. When it came to setting up the paint production line, the existing paint shop and the former mill building were used. At the south end of the mill building, a 190-ft prefabricated steel building was erected to provide space for washing and drying

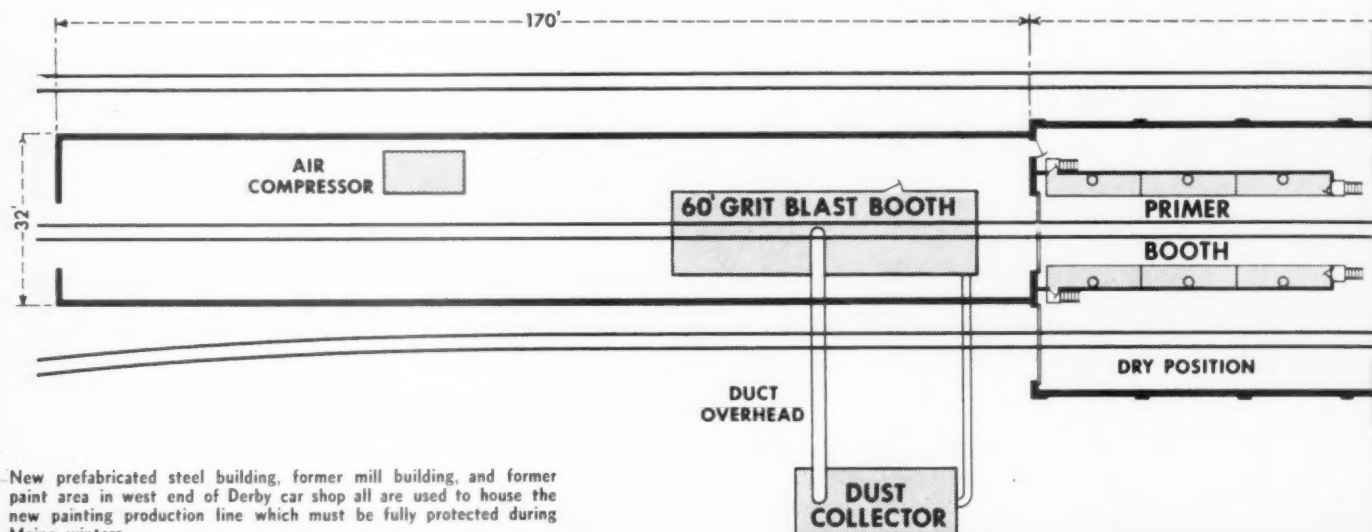


Grit blast was located in new prefab building which is long enough to hold two cars for washing and warming. New compressor supplements shop supply; insure air volume for painting.

cars, and to hold the Pangborn grit-blast cleaning room which was installed. The mill building was extended approximately 10 ft, and with the new prefab building, a 360-ft length of protected and heated track space is available.

Two cars can be accommodated in the drying area at the beginning of the line. Accumulations of ice and snow, or of dirt, can be washed down with steam and hot water. The earth floor of this area is adequately drained. Seven Trane, low-pressure-steam unit heaters can supply over 900,000 Btu/hr and two-thirds of this was calculated to be used in drying and warming cars for painting. A car spends a minimum of 4 hr here.

The Pangborn Type MS blast cleaning room is fitted entirely within the prefab building. It is expected that the



New prefabricated steel building, former mill building, and former paint area in west end of Derby car shop all are used to house the new painting production line which must be fully protected during Maine winters.



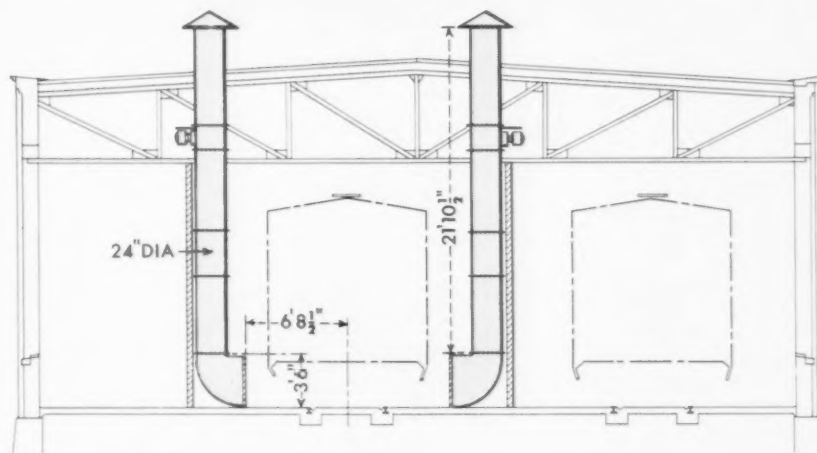
Insulated box car with trucks shrouded has just been grit blasted in Pangborn booth. This is the type of car which receives BAR's distinctive paint schemes.



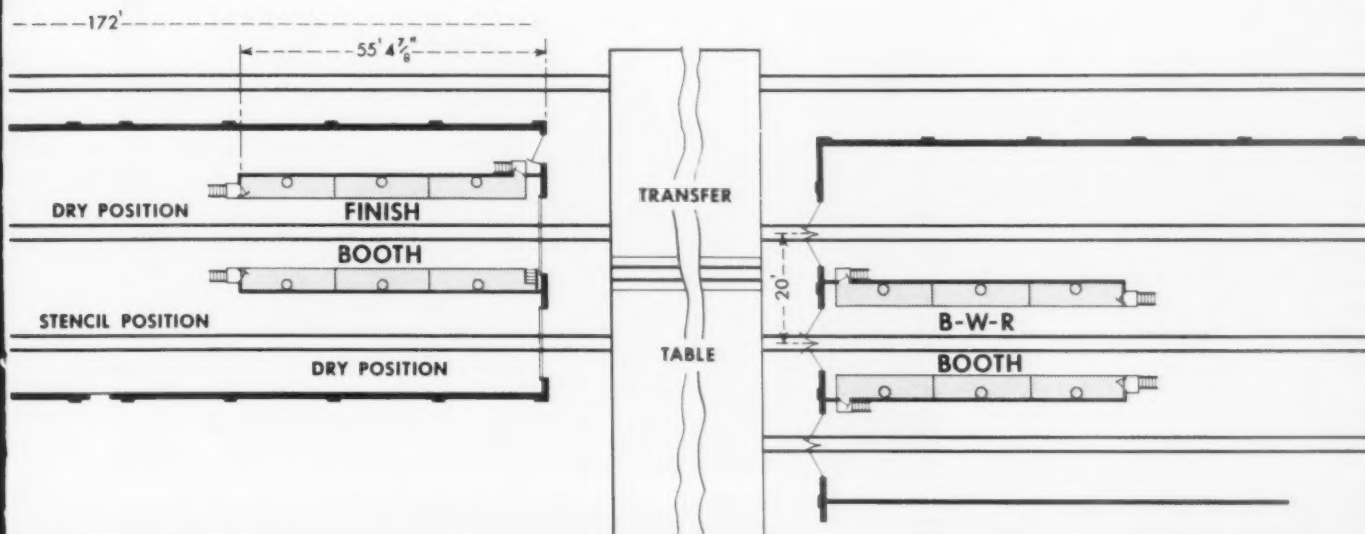
Railroad-designed paint booth where priming is performed is adjacent to blast booth, doors of which are in the background. This booth is in the former mill building and is similar in construction to the two finish coat booths. Tops of plenum chambers form car-floor-height work platform in booths.

improved surface preparation made possible with this equipment will extend the repainting interval by two years for all types of cars. Until now, the blue-white-red cars have been repainted after six years. This is expected to go to eight. Other freight equipment has been on a seven-year painting cycle, and this is expected to go to nine. The plant is laid out so that cars go immediately from the grit blast to the priming booth. The thoroughly cleaned surfaces should have no time to rust after blasting. Two men shot-clean three cars daily, and do necessary washing prior to that. Actual time in the booth is about one hour. Formerly disc sanders were used and they were slow and incapable of removing all the rust.

(Continued on page 18)



Six 10,280 cfm fans and separate exhaust ducts in booth produce a modified down-draft discharge which gives an air velocity of about 150 fpm down the car sides.

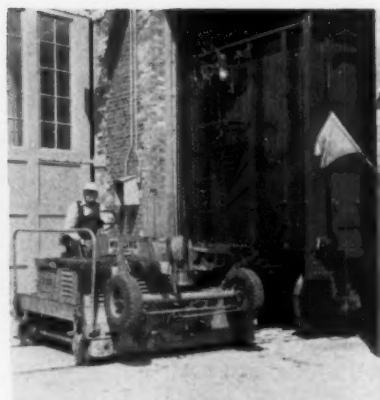




Paint arrestors are readily changed from plenum chamber filter frames. Individually controlled exhaust duct fans are turned on and off by painter as he goes around the car.



Separate Spee-Flo paint heaters for the individual colors are kept outside booths. Hoses go through opening in booth wall. BAR buys and uses paint from 5-gal containers.



Car moving on the production line is handled by small Trackmobile which formerly did all shop switching. Now it spends most of its time spotting cars for cleaning and painting.

The BAR gave consideration to traveling paint spray booths and discarded the idea because of restricted overhead clearances and because the variety of colors would complicate the operation. What have been built instead, are transite-walled, car-length booths with a modified down-draft exhaust system using forced filtration to remove overspray. Car-floor height platforms run the length of the car on each side, and it is from these that painters work. All painting is hand spray, using six-ft Eclipse guns. Paint is supplied from Spee-Flo spray units.

The BAR uses a fast-dry, zinc chromate primer and it is applied by a painter who makes one trip around the car putting on a mist coat, and then a second trip for a heavier coat. The aim is to apply a 2.5 mil thickness of primer, and this is a cold spray operation. Box car priming requires about 1.5 man-hours.

Between the two booths in the former mill building is a car-length area where underframes can be painted while the primer is drying. The car then moves into the finish booth. Here there is a 2 mil thick, hot-spray application of one coat of quick-drying synthetic enamel. This is the final coat for all cars except the blue-white-red boxes. For them, the basic white enamel coat is applied to each entire car side.

The enamels used by the BAR dry in approximately four hours. Roofs are painted, if inspection finds this necessary. For simplification, the BAR has recently been painting the ends of refrigerator cars with the same yellow used on the sides. For standard box cars, the application of the finish coat requires about two man-hours.

The exhaust systems in these booths are capable of moving 26,000 cfm. In addition to the regular unit heaters in the mill building, there are two wall-

mounted, high-pressure steam heaters mounted in wall openings and interlocked with exhaust fans to make up heat losses during painting. Lighting is arranged to give an intensity of 50 footcandles on working surfaces in the blasting, painting, and stenciling positions.

White, Red and Blue

Application of the red and blue finish coats to the b-w-r cars is done in a third duplicate booth in the old paint shop across the transfer table. There is track space for drying and for the application of necessary lettering stencils and masking on these b-w-r cars. First the red, and then the blue finish coats are sprayed on. Car movements on the entire production line are handled with a



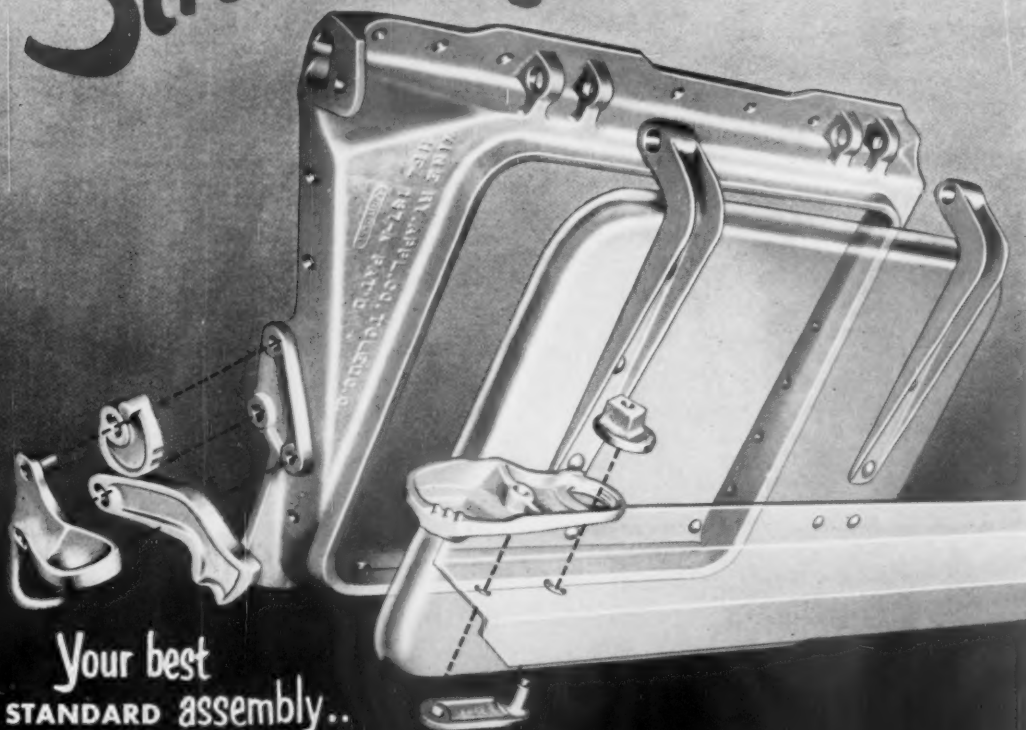
Stencilling position in shop has scaffolds to facilitate work. Cleaning vats and racks are conveniently located. Drying position in background has banks of infra-red lamps. Several types of cars may be on the paint line at one time.



Scaffolds and stencil racks at proper levels have simplified the preparation of the b-w-r cars for their final paint coats. With Demp Nock stencils, masking tape and paper masking applied, this car is ready for the final two coats of paint.

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THE WINE RAILWAY APPLIANCE CO., TOLEDO 9, OHIO

small Whiting Trackmobile. A newer, larger unit does the switching outside the shop.

Cars not requiring the second and third finish colors double back from the transfer table and are dried and stenciled. The BAR has tried spraying its lettering and emblems, but has returned to brushes to insure a quality job. Stenciling requires 2.5 to 3.0 man-hours for a standard box car.

The present three-per-day output usually requires six men on this paint production line. Two do the grit blasting and necessary preliminary washing and cleaning. One man handles the priming and occasionally assists another painter who works full time on stenciling. The prime coat painter spends at least three hours daily at duties other than those on the production line. One man handles the finish painting (three cars require about four hours). Masking, lettering and painting of the blue-white-red cars require two men.

Studies by the BAR mechanical department's cost control showed that the first 115 cars painted after the new shop went into operation were done with a reduction of 20.9 per cent in man-hours as compared with the last 115 compara-



Large Trackmobile, recently acquired, now handles the outside car moving at Derby shop. Moving out is one of the first of the cars carrying the BAR's latest paint scheme.

ble cars painted under the old system. This will be further reduced as the new shop routines are refined.

Labor expended in painting the colorful blue-white-red cars was reduced fully one-third with the new shop. Savings in labor are not the only benefits. It is believed that the improved surface preparation will increase paint life by two years. Mechanical superintendent V. L. Ladd estimates overall yearly savings



Regular washing of freight cars has been mechanized at Northern Maine Junction. Platforms 700 ft long on each side of this track make possible use of truck with Ross & White washer.

of \$66,000—mostly in extended paint life on the BAR's growing car fleet.

The Bangor & Aroostook is proving that a diversity of painting arrangements and colors need not prevent establishing a production line. At the same time, the new shop is showing that even a railroad with a modest car fleet can successfully operate such a line, and obtain the benefits of production painting procedures.

NYC Modifies Temperature Control

THE NEW YORK CENTRAL, to combat piston ring wear, fuel dilution and poor combustion, has installed new temperature controls on some of its older 600- and 1,000-hp Alco switchers. These units originally were equipped with mechanically driven fans operating continuously. Temperature control was maintained with the shutters. During the winter, the shutters occasionally leaked enough cold air to bring the temperature below that needed for maximum efficiency and caused excess wear on parts.

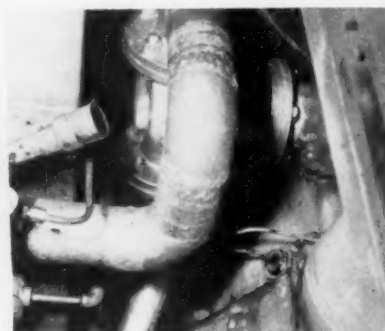
The Central's mechanical department, seeking an automatic, low-cost device that would hold the engine temperature to a minimum of approximately 150 deg and provide sufficient cooling to hold the maximum temperature below 180 deg during hot weather with the engine under heavy load, found valves last year that have solved the problem. Two valves—one manufactured by the Fulton Division of Robertshaw-Fulton Controls Company and the other, by



Temperature control is located on the front of the diesel engine back of the radiator.

the Amot Controls Corporation—were installed in two of the Central's diesels in 1957. They are balanced valves actuated by a plastic element which expands rapidly with relatively small temperature rises. The only alteration on the locomotive was the drilling of two 1/2-in. holes to allow sufficient water to circulate through the radiators to prevent freezing.

The performance of the test valves resulted in an operating temperature of 150 deg during several hours idling at outside temperatures of 15 deg. Engine operating temperatures ranged between 150 deg and 160 deg at all times re-

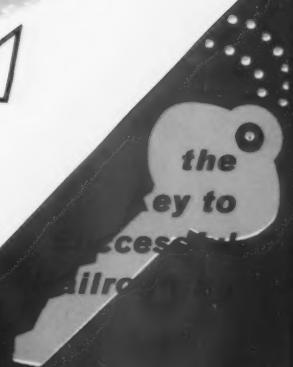


New design is applied in engine water outlet and required no modification of piping.

gardless of road conditions. Combustion in the engine cylinders was excellent, and a cab temperature of 84 deg was maintained with the engineer's cab window open and all other doors and windows closed. The units have operated through two winters.

Engines equipped with this device as installed by the New York Central should show savings in fuel due to obtaining proper combustion at all times, a reduction in cylinder liner and piston ring wear, the virtual elimination of fuel dilution in the lubricating oil, and the maintenance of warm cabs during severely cold weather.

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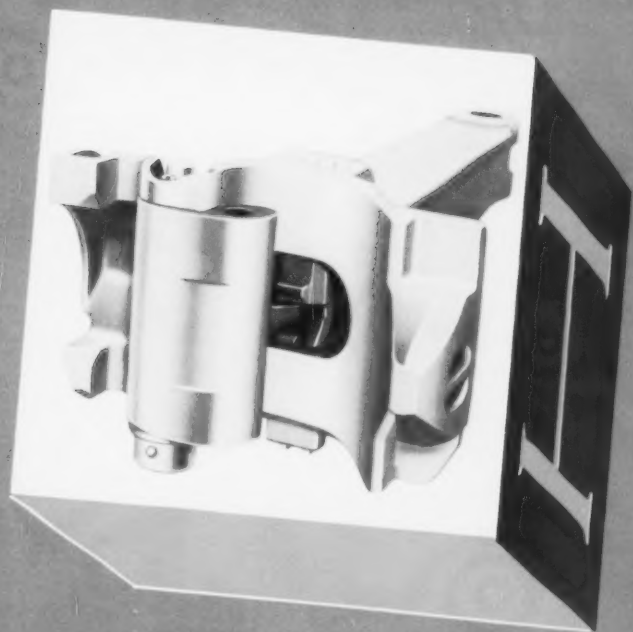
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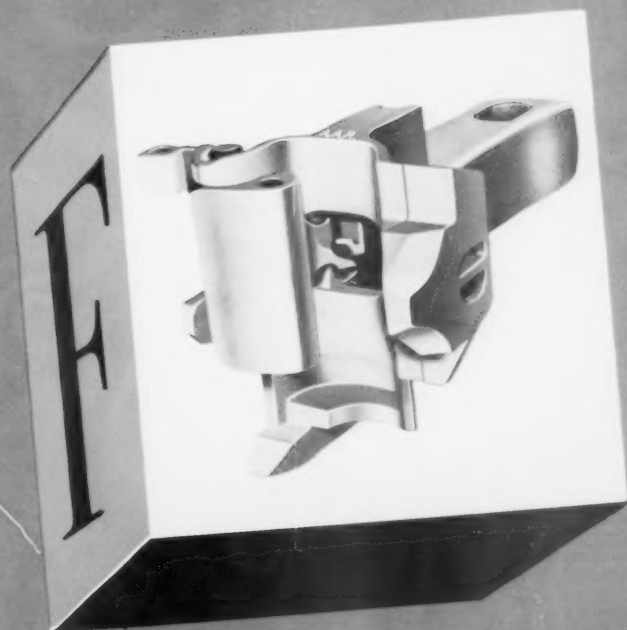
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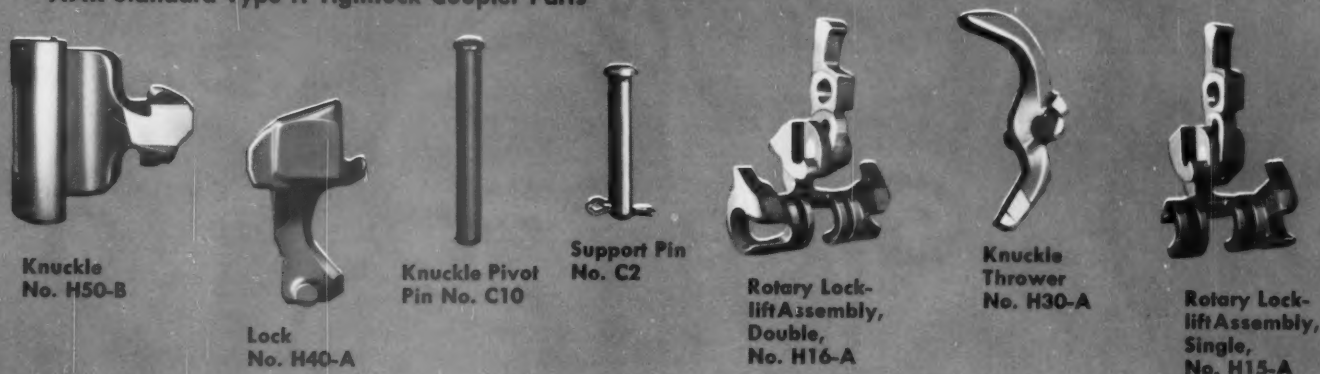
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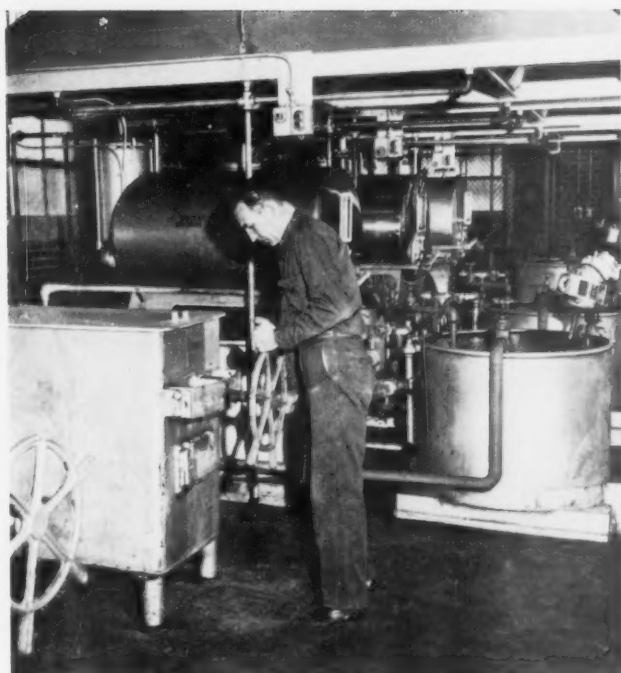
Railway Division Headquarters
Cleveland 6, Ohio

International Division Headquarters
Cleveland 6, Ohio

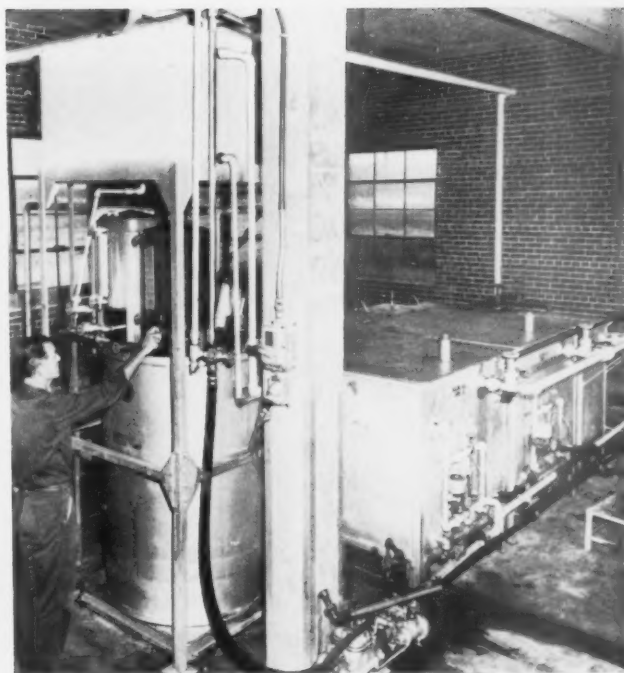
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Filter press (foreground) is used to remove the clay and contaminants from the oil. Previously, clay or diatomaceous earth is added to the dirty oil in mixing tanks at rear. Electric mixers do the blending.



Additives are placed in clean oil in special mixing tank and final product conforms to original specifications. At rear are clean oil tanks from which 200-gal batches are drawn for processing.

Santa Fe Gets New Oil from Old

The Santa Fe's new lubricating oil reclamation plant at the Topeka, Kansas, shops was placed in operation late last year. Supervised by the mechanical and research departments, it operates on a 24-hour basis, five days each week. The plant is designed to clean and fortify used diesel locomotive lubricating oils for re-use. Substantial savings result.

The present output of the plant is 7,000 gal per week. A modified distillation process combined with double filtration is used to restore lubricants to their original condition. The several brands of oil used are processed separately, and each is reformed to its original specification. Brand identity of the oil is retained through the entire reclamation process. Quality checks by the chemical laboratory assure an oil equal to the quality of new oil.

This reclamation plant is installed in a 36-ft x 65-ft fireproof brick and concrete structure which has an office and locker room in addition to the refining equipment. The equipment in the building consists of three 100-gal RefinOil machines each with mixing tanks, heat exchanger, retort and condensing equipment. There are two primary filters and one secondary unit.

Inside the building are three storage

tanks—one for condensed light oil and two equipped with thermostats and heating units for holding the oil prior to reformation. Four centrifugal pumps move the oil between the various storage and processing operations. Outside the building are two 10,000-gal tanks for holding oil when first received for reclamation. A three-compartment tank holds the oil after reclamation.

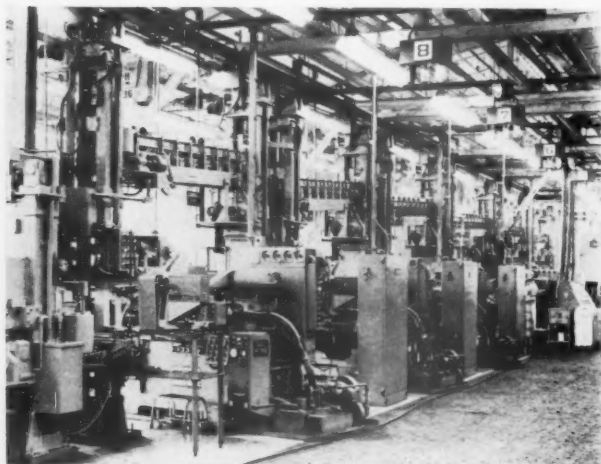
The dirty oil is shipped into the plant in either tank cars or drums, and contains contaminants of several different types—carbon, water, light oils, and plain dirt. Water and light oils are driven off by distillation, and carbon, dirt and some chemical materials are removed by filtration. Tank car shipments are pumped into a 10,000-gal storage tank equipped with thermostatically-controlled steam coils. This tank provides for gravitational settling of heavier contaminants prior to processing the oil through the plant. From here, oil is pumped into a heated 2,000-gal batch tank. Shipments of dirty oil in drums are emptied directly into this tank for settling.

The stills, or heating chambers, have a capacity of 100 gal. The oil is heated to 600 deg F and held at this temperature to draw off the water and light ends. The light ends are condensed and

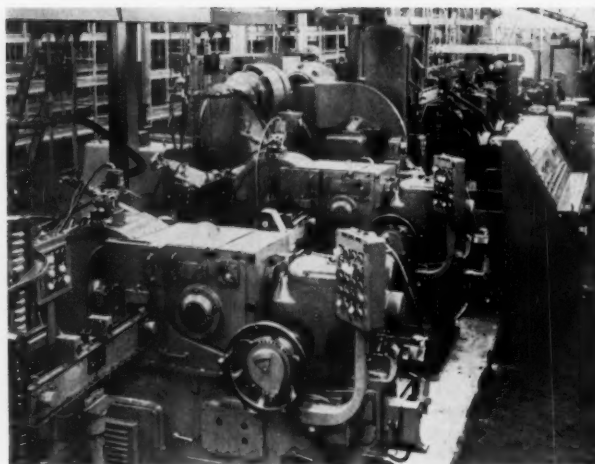
placed in a storage tank for use as fuel in the power plant. After the oil is cooled, it is dumped into a 100-gal mixing tank. A diatomaceous earth or clay is added as an absorbent and filtering aid. The quantity depends on the type of oil. Electric blenders mix the oil and clay together. This mixture is piped to a filter press, with the piping arranged so the mixing tanks can empty into any of the presses. Each filter press has a series of perforated iron plates. Between each plate is a filter paper. The mixture is pumped under pressure through the filters which pick up the clay with the contaminants. As an additional precaution, the oil is passed through a secondary, or polishing filter, which further refines it. The secondary filter also acts to prevent oil and clay from getting into the pipe lines, in case there should be a failure of the primary filters.

The refined oil then passes to storage tanks to await blending with the desired additive. The blending tank has a capacity of 200 gal and after thorough mixing and analysis, the oil is either pumped directly into tank cars for shipment or to a 10,000-gal reclaimed oil storage tank. This tank is divided into three compartments for storage of different brands of oil if so desired.

New Timken Plant Can Produce . . .



Heat treated cups are completely ground in eight operations on a line of as many grinders with automatic handling between machines.



A spiral elevator lifts rollers from floor level hopper into the Cincinnati grinder at the rate of 38 per min for the "first pass."

160,000 Freight-Car Roller Bearings a Year

TIMKEN OPENED recently its \$7,150,-000 railroad bearing production line at Columbus, Ohio. Equipped to produce 20,000 freight car sets per year the plant features automatic machining, heat-treating and materials-handling equipment.

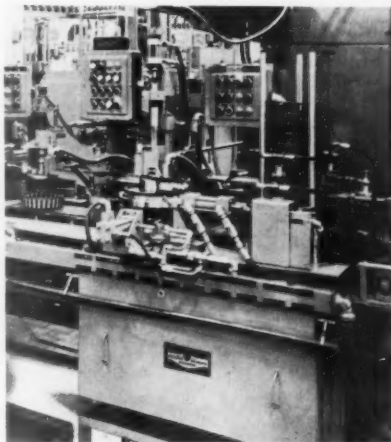
The five standard car sizes from 4¼ in. x 8 in. to 6½ in. x 12 in. will be manufactured on this line. Each size will be produced in quantity as a changeover in set-up must be made for each bearing.

Three major operations are performed by the line: green machining, heat treating and grinding. Bearing cups and cones are made from steel tubing. All operations, turning, boring, cutting are completed by automatic machines. After being marked for identification, they are heat treated, then delivered to the grinding line for final machining.

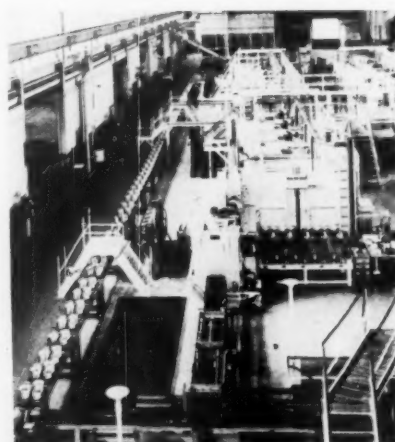
The rollers are made from bar stock. The operations are similar to those used to produce the cups and cones. After heat treatment the rollers are delivered to the grinding line where a spiral elevator feeder delivers them to the machines at the rate of 38 per min. Six grinding operations are performed. In the conveyor line gauges check roller size and length and automatically control the compensation for grinding wheel wear. By green, yellow and red overhead lights the operator of the grinding line can tell at a glance if a machine is either operating, waiting for some reason, or stopped requiring attention. Rollers are kept in sequence to make sure that all rollers in each bearing are as uniform as possible.

After inspection and the application of protective coatings to cups and cones all parts are brought together and assembled automatically. The assembled cones then are conveyed to a battery of machines where they are run in under load.

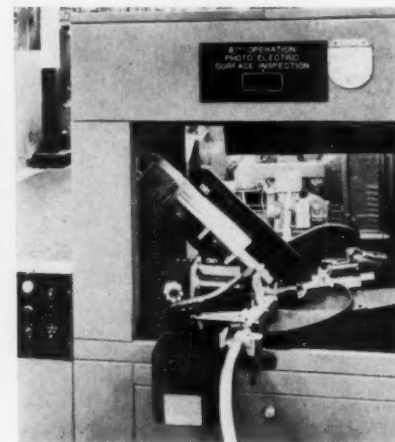
At the final assembly station one cup and two cones are assembled with a spacer of known length, then checked for lateral clearance. Next, the cone assemblies are greased and reassembled with the correct production spacer. Finally, the bearing receives a metered amount of grease and the grease seals. It is weighed to insure that the correct amount of grease has been added. Seal wear rings, cone backing rings and axle end cups are banded to the assembly before boxing for shipment.



In less than a minute the final cone machine assembles and checks all parts.



About 40 hr are needed to completely heat treat one piece in the carburizing furnaces.



At photo-electric inspection rollers revolve in a light beam which detects surface defects.

Making Progress in Face of Financial Problems

Journal performance, periodic interchange maintenance, and increasing scope of Federal regulation confront members at 31st AAR Mechanical Division meeting.

"Our research has already developed . . . better ways of doing what we do in mechanical departments, if we could finance them," W. M. Keller, AAR vice president—research, told the 31st annual meeting of the AAR Mechanical Division in Chicago. "What is of concern," he warned, is how to cope with such a situation and how to obtain some of these improvements in equipment in spite of such a situation." C. E. Pond, division chairman, paid tribute to the work of the committees of the Division and said their activities show there are "no curtailments in the development of better equipment and more efficient procedures."

A substantial increase in committee work load has resulted from the hearings conducted by Federal regulatory agencies. "Many of the rules and regulations under which railroads are now operating need revision due to changed conditions and technological progress that railroads have made in recent years," Pond continued.

"The gradual accumulation of controls—the slow infiltration of government into every phase of our operations—will surely impose more financial burdens than this industry can bear," warned R. G. May, AAR vice president, in discussing enacted and pending Federal legislation. "These bills seem to ignore that our safety program is one of the best organized and most effective of any industry."

The recently-revised Locomotive Inspection Rules and the recently-enacted Train Brake Act were discussed by W. M. Keller. Progress cannot thrive on restraint, he cautioned, and "it is hoped those regulatory bodies having jurisdiction in such matters will fully evaluate improved equipment and its ability to operate over long distances without attention. . . . The efforts of our equipment maintenance employees should be used in shops where their work can be most effective rather than at points where neither facilities nor conditions are conducive to best maintenance standards."

R. L. Dearmont, president of the Missouri Pacific, said that the benefits of dieselization may have made railroads unresponsive to other rising costs and called for an end to money wasted in three categories—funds expended in the payment of loss and damage claims, in the settlement of personal injury cases, and in paying for wrecks and derailments due to man and machine failure. All of these are of concern to mechanical officers. Mr. Dearmont called for a solution to the hot box problem and said that this requires general action because it is "something individual railroads can't do by themselves."

More realistic depreciation allowances could be a factor in stimulating heavy new railroad capital spending. Mr. May stated in summarizing future legislative goals. "We urge Congress to take action to allow railroads to establish construction reserve funds on their books as a means not only to develop better railroads, but also to stimulate and stabilize production and employment in the million-man railroad supply industry. This form of tax deferment is one of the most effective that can be taken to ease the plight of the industry and to assist all who depend on it."

More To Do

H. C. Wyatt, vice president and general manager of the Norfolk & Western, called for the correction of weaknesses in today's equipment. "Both operating costs and operating performance are governed to a substantial extent by the design, maintenance and servicing of locomotives and cars," he said. Two phases of locomotive operation requiring "constructive vision and thinking," outlined by the speaker, are new methods for improving wheel-rail adhesion and for lubrication of wheel flanges.

"Greatest opportunity for improvement" is in the freight car field, according to Mr.



Missouri Pacific's President R. L. Dearmont addressing joint session of Mechanical Division and Electrical Section.

Wyatt. Air brakes need improvement. Reduction of charging time, unitized assemblies and more trouble-free operation are goals yet to be achieved. Draft gears and car flooring and lining will have to be better.

"Very little progress has been made in providing at reasonable cost a bearing assembly that does not need to be continually nursed. The number of hot boxes on American railroads is approximately the same as it was five years ago. . . . If the railroad industry expects to get maximum benefit from improved lubricating devices, they should be used by all of the carriers," he emphasized.

Mechanical Division's New Officers



S. M. Houston
Gen. S.M.P.
SP

S. M. Houston, general superintendent, mechanical department, Southern Pacific, has been elected chairman of the AAR Mechanical Division for a two-year term expiring in June 1906, succeeding C. E. Pond, general superintendent motive power, N&W.

In other election results announced at the closing session of the Division's annual meeting, J. W. Hawthorne, general superintendent motive power and equipment, Atlantic Coast Line, was elected vice chairman and seven members of the General Committee were re-elected to new two-year terms. These include T. T. Blickle, AT&SF; R. E. Franklin, Southern; J. H. Heron, GN; W. F. Kascal, NYC; D. S. Neuhart, UP; C. E. Pond, N & W; and F. B. Rykoskey, B&O.



J. W. Hawthorne
Gen. S.M.P. and E.
ACL

Atlantic City Meeting Postponed

Due to present economic conditions, the Atlantic City meeting in 1959 has been postponed. Because of the postponement, the General Committee has scheduled next year's Mechanical Division meeting at Chicago.

By special letter ballot, the membership of the General Committee was increased from 13 to 15 members. The Mechanical Division's Rules of Order are being completely reviewed to incorporate this change and also other changes that may be desirable. The revision will be submitted to member roads for consideration.

Hot-Box Records

Records of several of the larger roads show that cars with journal lubricators give from two to five times better performance than cars with loose journal packing. The improvement in the hot-box record for late 1957 and early 1958 is attributed to the greater percentage of lubricators in service.

Three proposals were made to improve the hot-box record on tank and other privately owned cars: (1) Request all interchange bureaus to arrange meetings with mechanical representatives of the tank and other private car companies. (These meetings are to include on-the-spot inspections of the cars. It was pointed out that meetings of this type resulted in an improvement in the hot-box situation in the west coast area). (2) Private car lines are to be encouraged to increase their application of journal lubricators as they lag in this program, and (3) Institute a program on all railroads for removing from service all private car line cars with trucks in bad condition.

Rules Changes

Changes in the Interchange Rules governing the transition from cast-iron to steel wheels were clarified by a circular letter dated January 29, 1958. This circular outlined in detail the procedures to be followed.

By the "Power or Train Brakes Safety Appliance Act of 1958," effective August 9, 1958, the AAR rules for inspection, testing and maintenance of air-brake equipment on locomotives and cars, as revised in July 1957, will become the rules of the ICC. This is the so-called Red Book. A permanent liaison committee has been named to handle questions pertaining to interpretation of the Red Book.

Special Committee on Ex Parte 174

Ex Parte No. 174, the order of the ICC on "Rules and Instructions for Inspection and Testing of Locomotives other than Steam," was released on April 1, 1958. The General Committee noted that certain new proposals and amendments are still remaining in this order which might impose substantial and unnecessary burdens. This is particularly true if they should be interpreted and applied in an unfair manner. A special committee has been appointed and is now engaged in the task of developing clarifications of a number of questionable details. Each railroad is to report to this committee where interpretation and application of any of the rules conflict with the standing practice of the railroad or with the railroad's own interpretation of the correct meaning and application of the rules. This special committee will not restrict any railroad from handling differences directly with the ICC or its staff. However, each railroad is asked to advise the special committee of these differences and the results obtained.

Loose-Leaf Loading Rules

A matter of discussion for several years, printing of Load Rules pamphlets in loose-leaf form, has been resolved in favor of this method. It is expected that this change can be made so the Loading Rules can be issued loose-leaf either late this year or early 1959.

The AAR Wheel and Axle Manual is being revised, but no decision has been made on the date of issue.

Piggy-Back Standardization

Interchange of piggy-back cars is on the increase. With this fact in mind the Car Construction committee points out the increasing importance of equipment standardization. Development work has made this objective impossible during the past few years. Now the committee believes that the peak of development has been reached and attention can be given to standards for interchange service.

Although standardization is essential the committee does not want it at the expense of further progress in this field. It reported the following six developments in piggy-back equipment:

1. ACF retractable trailer hitch. A single tie-down retractable device with built-in rubber draft gear that fastens to the trailer king pin.

2. Clark Mobilvan system. An anchor system for fastening shipping containers to flat cars. It consists of the Mobillock latching mechanism that is installed on the bottom of shipping containers and the Mobilplank anchor mechanism applied in the decking of flat cars for locking containers to these cars.

3. Pullmann-Standard Trailmobile container system. A flat car designed to carry trailers with an arrangement for application of a fifth-wheel stand. Adjustable safety chains are provided for rear of trailers. This car is also adaptable for carrying containers, utilizing the fifth-wheel stand to support one end of container with other end supported at sides of car by means of adjustable brackets.

4. Flat Car equipped with two turntables. This is a flat car, designed by Seatrain Lines, Inc., equipped with two turntables for handling vans.

5. Southern Pacific Piggy-Back, Inc. cars. These cars were built in S. P. shops under license by Piggy-Back, Inc. They were built with a center sill made up of two I beams, end sill and bolsters. Running boards and railings are secured to cross members that are supported by the center sill for use of trainmen. These cars are equipped with shock absorbers and locking bars. Trailers used with this system are equipped with dollies, two per axle, each having two flanged wheels that ride on the outside flanges of the center sill I beam.

6. Brandon-Russell rolling bridge for piggy-back cars. A type of apron that is a rolling bridge for spanning the opening between piggy-back cars. This design incorporates two flanged wheels attached to the inner end of the bridge which roll on a track located just below the deck level. Two additional flanged wheels are attached to a curved cantilever spring which is attached to the bridge understructure and extends slightly beyond the end of the car. When moving the bridge from running to loading position it is shoved towards the adjacent car. It is held slightly above car deck level by the spring action until the overhang causes sufficient load on the springs to permit the outer end of the bridge to rest on the deck of the opposite car. Safety latches lock the bridge in either running or loading position.

In addition to the developments listed above, there have been a number of tie-down arrangements designed by railroads and other industries.

Eighteen letter ballot items were included in the Car Construction report. Some of these items are covered in other reports.

A note is to be added to Manual page C-3—Fundamentals of Car Design, directing attention to the maximum permissible height

of 84 in. for the center of gravity of a loaded car without the necessity of a request for special handling.

Plate B of the Supplement to Manual is to be modified by the addition of a new note directing attention to the necessity for decreasing width of cars designed with truck centers longer than 41 ft 3 in.

Plate C-2 of the Supplement to Manual, covering "Specifications for Standard Freight Refrigerator Cars" is to be brought up-to-date. Changes involve 12 items. Special alloy steels may be substituted as construction materials. The inside lining of doors must be flush with car lining. Insulating materials are to be submitted to the AAR Research Center for test and changes are recommended in fire-resistant requirements. Other changes cover construction details, location of drains to avoid dripping on journal boxes, hatch openings and plugs and threshold plates.

The Standard, "Sills, Steel and Splicing," shown on Manual pages C-10 to C-16-A, inclusive, is to be revised to include latest advancement in the art.

Manual page E-28 showing location of angle cock is to be revised. This change is recommended to correct conditions now causing cut hoses. Dragging hoses are also operating dragging equipment detectors.

Car lumber preservative treatment, when used, is to be in accordance with the American Wood Preservers Association Standard No. C-15.

Plate D, permissible alternates of the Supplement to Manual, is to be modified to require the use of two (instead of one) 3 in., 6.7 lb per ft steel Z-sections each side of center sills when using nailable steel floors or composite metal and wood floors.

Diesel Designs "Frozen"

With one exception the Committee on Locomotives found that the buyer of motive power has very little from which to choose. It noted that diesel electric designs are so well standardized that the designs are virtually "frozen." This situation, it said, effects economies in parts, exacts a high penalty in design progress.

The exception is the gas turbine electric locomotive. Twenty-five 4,500-hp gas turbine electric locomotives, delivered in 1952, '53 and '54 to the Union Pacific, continued in service. Soon to be delivered by General Electric to the same road are fifteen 8,500-hp locomotives of the same type. At the end of 1957 the 4,500-hp locomotives had operated a total of 11,519,019 miles. In freight service this power averaged 8,850 locomotives-miles per month during 1957. This was a 12.33 decrease from the 1956 figure.

Since 1952 one of the gas turbines had accumulated 24,340 hr, the highest total hours for any turbine in the group. The history of this turbine, given in the report, shows a significant trend of longer periods between removals. Life of turbine components has increased steadily. At the end of 1957 the average turbine hours per removal for the previous six years was 3,386. It was 2,969 at the end of 1956 for the previous five years.

EMD To Build Free-Piston Locomotive

The committee was advised in December 1957 by Electro-Motive that the state of development of the free-piston engine and turbine warrants a field application. It in-

tends to build an experimental locomotive using a 2,000-hp twin-cylinder free-piston engine. A 1,000-hp single-cylinder engine was used during most of the development work but EMD had designed and had in operation the twin-cylinder engine at the end of last year. The locomotive will have this GM-214 free-piston engine with matching turbine and a gear box. It will be equipped with a standard traction-generator, traction motors and controls. The engine will burn the lowest cost fuels obtainable.

Status of Other Turbines

On December 31, 1957, the Norfolk & Western retired permanently its experimental 4,500-hp coal-burning steam turbine electric locomotive. This unit had been placed in service in 1954.

Additional information was given by the Locomotive Development Committee on the coal fired gas turbine locomotive equipment. These data covered work in 1956 and 1957 on the coal system, coal pumps, pulverizer, combustors, flyash separator and the turbine. The report did not mention future plans for the development of this equipment.

The committee also reviewed the 300-hp gas turbine mechanical drive locomotive built for the Transportation Corps by Davenport Besler. It included mention of several European turbine locomotives in the report.

Proposed Nuclear Locomotive

Baldwin-Lima-Hamilton and the Denver & Rio Grande Western are continuing a feasibility study under a contract with the Atomic Energy Commission. The power plant design is still under consideration.

The committee felt that the comments of Dr. Edmund Teller, one of the world's leading nuclear physicists, was worth reprinting (see RL&C, Dec. 1957, p. 10). Appearing in the 1957 Fall issue of *The Lamp*, published by the Standard Oil Company of New Jersey, Dr. Teller said, "I think such a machine is a most ingenious solution to the question of how to combine minimum utility with maximum danger. Trains in the atomic age will no doubt be electric."

Oil or Grease?

Study has been made to determine the advantages of oil and grease lubrication for roller journal bearings on diesel or gas-turbine locomotives. Oil is a better lubricant but more difficult to retain. The lack of perfect oil seals led to tests of greases. The committee said that a less efficient lubricant that can be retained may give a better performance than a perfect lubricant difficult of retention.

With Timken and SKF bearings the committee said that successful experience makes change from oil to grease safe without extensive tests. Grease lubrication of Hyatt bearings is in the test stage. Some of the tests already made on grease lubrication of Hyatt bearing seemed contradictory. The committee noted that speed, curvature and hardness of grease affected the results with respect to the successful lubrication of the lateral thrust in these bearings.

Other Diesel Subjects

Because of variations between railroads the committee suggested the following system for classifying diesel locomotive repairs:

Class 1. Mileage or Time Inspection and overhaul of mechanical and electrical equipment including top deck overhaul or complete overhaul of the diesel engine.

The work distinguishing Class 1 is top deck overhaul or complete overhaul of the diesel engine.

Class 2. Inspection and repair work of mechanical and electrical components including top deck overhaul, or complete overhaul of the diesel engine (or a new engine) and removal and overhaul of main generator.

The work distinguishing Class 2 is the removal of main generator for overhaul.

Class 3. General repairs to the body structure including re-wiring, repiping where necessary, top deck overhaul or complete overhaul of diesel engine and removal of main generator for overhaul.

Mandatory Lubricator Date Goes Unchanged

No move was made to extend the 1960 date when journal lubricator devices will be required on all interchange equipment. However, the Committee on Lubrication did establish new standards of performance for journal lubricator devices given test approval status. Such devices must perform as well as loose packing during their first 12 months in service and at least 100 car sets must be sold in this first year or test approval will be withdrawn.

With these new performance standards, five devices have been given "Approved for Test" status this year: Easy Pak Journal Lubricator, Jour-Waste Pack Journal Lubricating Pad, Sockwell Reversible Package Type Lubricator, Armstrong Oiler, and Utility Journal Lubricating Pad. The Journapak lubricating device has advanced to the "conditional approval" status, joining four other types.

Renovation of journal lubricators should be in accordance with AAR Specification M-910-A, the Committee warned, and detailed important factors. A preliminary inspection will discard devices too worn or damaged to be reconditioned, and the varying amounts of dirt and water in the pads must be judged so cleaning time can be varied to insure uniform cleanliness.

The washing process is important, according to the Committee. Washing oil should be between 220 and 240 deg F, and should be kept clean. Sufficient agitation should loosen all debris, even that deeply imbedded in the pad. Final inspection of pads should include use of the AAR permanent set gauge.

Repairing Damaged Lubricators

Rips and tears can usually be repaired by hand sewing, the Committee reported. Pads having loops or loose ends of blanket material pulled out should have this material sheared back to not more than 1½ in. length. Pads with the blanket material worn on one side can be reused if the other side is good enough to insure oil delivery along the length of the journal. Pads moderately worn on the ends can be reused, but those so worn at the ends that they might no longer deliver oil to the journal should be scrapped.

Pads of the Rolin type can be repaired by applying new cross support springs, and the Committee stated that it is desirable to keep Rolin retainer springs with the device when shipping it to and from the reclamation plant. Packaging pads for return to line points can be best done in clean 55 gal. steel drums with lids. They can be loaded on end in multiple rows and only one size and type should be loaded in each container.

The work distinguishing Class 3 is general repair to body structure.

The committee is also working on a code of rules outlining the proper method for storing diesel locomotives.

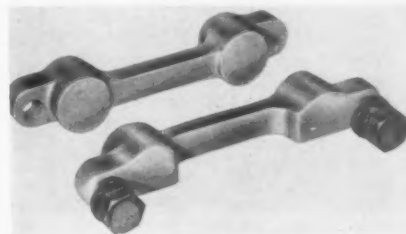
Diagrams now shown in Sec. F, Pg. 240, of the AAR Manual are not generally in conformity with an interpretation given by the ICC Bureau of Safety. To meet the bureau's minimum requirements the sanding arrangements shown by diagrams accompanying the report were developed. The locomotive committee recommends these arrangements as a letter ballot item.

Seals and Stops

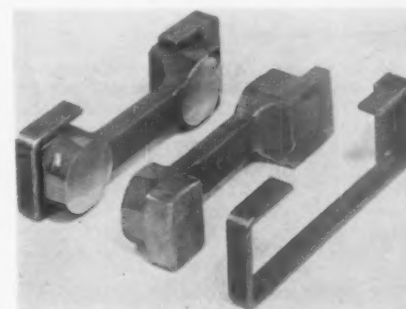
"Service life and efficiency of both dust guards and journal box rear seals can be greatly increased by proper control of journal movement within the journal box by use of approved journal stops," the Committee stated. "The present design of dust guard is inadequate for the purpose intended," the report continued, "and there is a need for improved designs of dust guards and journal box rear oil seals." A subcommittee is studying the application of neoprene seals to box lids.

The committee has approved two types of journal stops developed by the Journalstop Co. Continued good performance of cars equipped with R-S journal stops was reported. The truck of a Frisco ballast car equipped with R-S stops in 1951 still has the original bearings in it. The other truck, conventionally arranged, has had several sets of bearings, the most recent just 13 months ago. Other cars in service for shorter times showed journal stops equally effective in preventing bearing wear.

Better load distribution over the bearing surface of the solid assembly is the goal of a series of test programs. Two railroads and a private car line operator have been equipping



Bronze Type C journal stop (above) bolts into box. Type W (below) is inserted into steel frame. Developed by Journalstop Co., both have been approved for test.



Railroad	Hop.	Box	Gon.	Flat	Other	Total
Akron, Canton & Youngstown	75	1	1	—	6	83
Apalachicola Northern	—	—	—	—	50	50
Atchison, Topeka & Santa Fe	—	575	—	3	290	868
Atlanta & Saint Andrews Bay	—	—	—	—	26	26
Atlantic Coast Line	3,584	948	—	112	2,420	7,064
Baltimore and Ohio	55	10	—	—	—	65
Bangor & Aroostook	—	125	—	—	75	200
Bessemer and Lake Erie	10	—	—	3	—	13
Boston and Maine	426	1,949	—	175	—	2,550
Butte, Anaconda & Pacific	—	—	—	—	202	202
Canadian National	—	—	—	158	1	159
Canadian Pacific	—	—	7	263	—	270
Central of Georgia	—	—	—	—	1	1
Chesapeake & Ohio	998	500	—	—	105	1,603
Chicago & Eastern Illinois	—	—	—	11	—	11
Chicago & North Western	—	1	—	—	—	1
Chicago, Burlington & Quincy	110	—	—	1	127	238
Chicago Great Western	175	—	—	1	82	258
Chicago, Milwaukee, St. Paul & Pacific	20	5	—	—	123	148
Chicago, Rock Island & Pacific	—	10	—	50	61	121
Cincinnati	—	10	—	—	—	10
Denver & Rio Grande Western	—	—	—	—	1	1
Duluth, Missabe & Iron Range	20	—	—	—	—	20
Erie	95	—	—	100	—	195
Great Northern	832	260	46	55	54	1,247
Gulf, Mobile & Ohio	—	—	—	1	313	314
Illinois Central	30	—	—	—	—	30
Kansas City Southern	80	—	—	50	—	130
Louisiana & Arkansas	75	—	—	—	—	75
Louisville & Nashville	100	325	—	—	272	697
Mexican Railways	—	11	—	—	—	11
Missouri Pacific	—	1	—	—	—	1
Nevada Northern	—	—	—	—	4	4
New York Central	1	—	—	176	—	177
New York, Chicago & St. Louis	139	12	—	—	—	151
New York, New Haven & Hartford	—	—	—	308	125	433
Norfolk	103	—	—	—	750	853
Pennsylvania	220	2	—	1	—	223
Pittsburgh & West Virginia	50	—	—	7	—	57
Reading	150	—	—	—	—	150
River Terminal Ry.	—	—	—	17	—	17
St. Louis-San Francisco	410	—	—	—	200	610
St. Louis-Southwestern	100	28	—	—	2	130
Seaboard Air Line	—	—	200	—	300	500
Southern Pacific	200	354	—	181	600	1,335
Southern	1,006	625	101	135	302	2,171
Spokane, Portland & Seattle	—	—	—	—	2	2
Tidewater Southern	—	5	—	—	—	5
Toledo, Peoria & Western	—	1	—	—	—	1
Union Pacific	968	310	—	1	1,243	2,522
Wabash	252	—	—	—	—	252
Western Maryland	2,453	—	—	98	—	2,551
Western Pacific	110	106	100	75	35	426
Total	12,849	6,174	455	1,982	7,742	29,202

Private Car Lines	Hop.	Box	Gon.	Flat	Other	Total
A.C.F. Industries	—	—	—	9	10	19
American Refrigerator Trans.	—	—	—	—	225	225
American Steel Foundries	—	3	—	—	2	5
Burlington Refrigerator Express	—	200	—	—	—	100
Columbia-Southern	—	—	—	—	5	5
E. I. du Pont de Nemours & Co. Inc.	—	—	—	—	30	30
Electro-Motive Division	—	—	—	—	2	2
Erie Mining	185	—	—	—	—	185
Ethyl Corporation	—	—	—	—	38	38
Fruit Growers Express	—	—	—	—	1,809	1,809
General Chemical	—	—	—	—	2	2
General Motors Overseas	—	11	—	—	—	11
Greenville Steel Car	—	—	—	—	1	1
Merchants Despatch	—	—	—	—	50	50
National Cylinder Gas Company	—	—	—	—	6	6
Pacific Car & Foundry	—	—	—	—	1	1
Pacific Fruit Express	—	—	—	—	1,000	1,000
Petroleos Mexicanos	—	—	—	—	4	4
Pullman-Standard	—	—	—	—	2	2
Railway Express	—	—	—	—	500	500
Republic Steel	—	—	—	—	60	60
Shippers Car Line	—	—	—	—	15	15
Sperry Products	—	—	—	—	1	1
Trailer Train Company	—	—	—	502	328	830
Union Tank Car	—	—	—	—	10	10
U. S. Army	—	—	—	—	7	180
U. S. Navy	—	1	—	—	—	187
Western Fruit Express	—	—	—	—	160	160
Total	185	215	—	518	4,541	5,459

Non-Interchange Cars	Hop.	Box	Gon.	Flat	Other	Total
Alaska	50	1	100	50	20	221
Atomic Energy Commission	—	—	—	83	—	83
Iron Ore Co. of Canada	—	—	2,975	—	—	2,975
Oliver Mining	—	—	—	—	20	20
Orinoco Mining	—	64	—	—	559	623
Quebec, North Shore & Labrador	—	26	—	—	99	125
Reserve Mining	—	—	—	—	503	503
Seatrains Lines, Inc.	—	—	—	—	1	1
Unit Load Car Co.	—	1	—	—	—	1
Weirton Steel	—	—	—	—	9	9
Total	50	92	3,075	133	1,211	4,561

SUMMARY

Railroads	12,849	6,174	455	1,982	7,742	29,202
Private Car Lines	185	215	—	518	4,541	5,459
Non-Interchange Cars	50	92	3,075	133	1,211	4,561
Grand Total	13,084	6,481	3,530	2,633	13,494	39,222

Freight cars equipped with roller bearings as of December 31, 1957.

cars with 50-in. radius wedges. Other tests are of bearings with raised pads on the back; and the elimination of the optional depressed-back design of bearing is being studied. The Committee is recommending color coding of controlled clearance journal bearings—red for A-1, white for A-3, and yellow for A-5 sizes. A dab of paint of the proper color would be placed on front.

Roller Bearings Popular

Roller bearing freight car ownership jumped by over 8,000 in 1947 and totalled 39,222 cars by year end. Five new greases—one each produced by Gulf, Texas, Sinclair, Shell and Richfield—have been approved for lubricating roller bearings. During this past year the re-lubrication period for this type of roller bearing was extended from 12 to 18 months and the Committee is now studying the possibility of extending it still further to 36 months. Timken bearings under GM&O and SP cars were checked, and "while leakage did occur, the bearings which were disassembled were in excellent condition after 36 months." Tests on Hyatt and SKF units are now underway.

Lubricators on PRR

H. M. Wood, PRR, said that Committee work with the journal stop should not be used to prolong the use of loose waste, and added that waste was "never satisfactory." He urged that minimum standards be established for journal lubricating devices including requirements for wicking, oil retention, interchangeability and cover characteristics. The Pennsy then suggested a standard of 4.7 pints be adopted for minimum oil retention capacity.

Oil retention is important. PRR laboratory work on 15 lubricating devices shows that

oil retention ability varies from 1.36 to 6.85 pints. Four of these 15 devices are on the low oil-retaining side and are not in favor with the PRR. Two of the 12 devices used on PRR cars give the best results, but the general average for pad cars is 699,500 miles per hot box, while loose waste performance is 156,500 mi—a performance four times better. Forty percent of Pennsylvania cars have the two types with the highest oil retention ability (6.85 pint range). These cars operate 2,700,000 miles per hot box and are 17 times better than loose waste. The PRR carries ½ in. of free oil in pad-equipped boxes.

A particularly good test situation is produced by the PRR movement of import iron ore. About 104,000 car loads, 6,000,000 tons, have been moved. There were four pad failures and 301 loose waste hot boxes in this movement. Pad cars handled 23 percent of this movement and had only 2 percent of the hot boxes. Mr. Wood said evaluation of lubricators should be in the toughest service and added that 60 percent of PRR pads are on 70-ton hopper cars.

Lubrication Investigations

Railroad engines and their lubrication are being studied by the Coordinating Research Council, a joint operation of the American Petroleum Institute and the Society of Automotive Engineers. Initiated at the AAR's request, the objective of the project is to determine interdependence of lubricants and different types of engines under a variety of operating conditions. Information has been collected on test techniques. Data on oxidation stability, corrosion, frictional properties, deposit formation and additive depletion has been assembled.

A code for conducting and reporting diesel lubricating and fuel oil tests, Mechanical Research Report No. MR-305 published early

this year, establishes uniform test methods and reports, so tests conducted by one road or laboratory can be interpreted by other roads.

Field tests of lubricating oil in diesel engines are in progress. The committee expects that all tests will be made in conformity with the test manual since its publication. A subcommittee is developing information on unusual types of lubricating oil in use or under test by member roads.

Results of several service tests of fuel oil should be available this summer. A study is being continued on the effects of anti-sludging fuel oil additives but no conclusions are available. Propane as a fuel source was investigated by the committee. It was done because of the favorable price differential of propane over fuel oil. The committee believes that propane's advantages are outweighed by its disadvantages. The principal disadvantages are the hazard involved in handling a highly flammable pressurized fuel and the loss of approximately 25 per cent rated horsepower. Advantages appear to be a 28 per cent reduction in fuel cost, low engine wear rates, clean engines and lubricating oil, and no dilution of the lubricating oil by fuel oil.

AB Brake Cleaning Period May Be Extended

Progress reports on cars allowed to operate 48 months without cleaning, oiling, testing and stenciling have furnished sufficient data to warrant extension of the cleaning period. The Committee on Brakes and Brake Equipment has recommended action be taken to extend the periodic C.O.T.&S. of freight brake equipment from 36 to 48 months.

A suggestion made to modify the Interchange Rules to provide that air brake hose five years old or over be removed from

service did not meet with committee approval. Many hoses now in use are over ten years old. The major reason for removing hoses from freight cars is because of damage due to improper angle cock location. A recent check made by an AAR mechanical inspector of 1,054 hoses revealed that 57.7 per cent were damaged as a result of improper angle cock location and couplers passing.

Three letter ballot items have been recommended concerning air-brake hose couplings. One provides a change to permit alternate methods of testing reclaimed couplings and brake pipe hose assembly including gasket without lowering present standards. The second provides an alternate test after the reclaimed coupling is mounted on a new hose. The third recommends that the surfaces of the gasket groove and coupling face on new couplings must be cadmium plated at least 0.005 in. thick to reduce corrosion. The committee has been working with the AAR Research Laboratory to determine the best method of preventing rust and corrosion of hose couplings. Various rust preventatives and plastics have been tested. Aluminum and stainless steel ring inserts have also been reviewed.

A letter ballot item has been recommended to revise the air hose gasket to include a bead on the back face. The beaded design has proven definitely superior to other forms

in laboratory and service tests. Leakage has been reduced under cold weather conditions and in coupling grooves which have become pitted.

The air brake manufacturers have designed additional condemning gages for used "AB" valve parts to establish limit of wear on parts not covered by present gages. The committee has recommended the seven additional gages be submitted to letter ballot.

Basic requirements and limiting dimensions have been established to govern the manufacture of automatic slack adjusters for freight cars insofar as interchangeability is involved. The committee suggests that drawings now available be accepted and instructions be given to permit issue of conditional certificates of approval.

The Joint Sub-committee has recommended to this committee and the Committee on Car Construction that use of the retaining valve be continued on all freight cars. Relocation of the valve has been found desirable, preferably on the side of car. Further investigation will be made, since in some cases a location on the side of car would exceed maximum clearances.

In the question of welding brake pipe in lieu of clamping, the committee believes that welding of pipes to form supports and supports to car structure will meet the requirements of Specification 2518.

New Hand Wheel Standards

The committee on Geared Hand Brakes has developed two designs of hand wheels. One or the other can be properly applied to every model of vertical-wheel hand brake now on the market. Letter ballot action has been recommended on limiting design dimensions for a Deep Type Wheel to be adopted as standard and a Shallow Type as alternate standard. The standard design must be used on all new types of geared hand brakes and intended for use on all existing types where proper clearance can be obtained. The alternate design is intended for use only on existing types of geared hand brakes on which the AAR standard wheel will not provide proper clearance.

One level-type geared hand brake received an AAR Certificate of Approval this year, bringing the approved list total to 36. Letter ballot action was recommended to provide for a more secure fastening of the handwheel and a standard length of hand brake lever.

Journal Finish Standards

The Committee on Axles has recommended as a letter ballot item that machined surfaces of journals in bearing contact areas must be finished to 125 microns, maximum. The rolled surfaces must be finished to 16

1959 Interchange Rules Will Incorporate Many of These Recommendations

These are the principal items recommended by the Arbitration Committee and the Committee on Prices for Labor and Material to be added to the Interchange Rules. Most will be submitted for letter ballot action.

Rule 3, Section c

Modification of Paragraph 1 and elimination of Paragraphs 5, 6, and 7 and note to eliminate obsolete material by specifying "Couplers, AAR Standard or AAR Alternate Standard required on all cars in interchange. . ."

Rule 3, Section f

Modification of Paragraph 3 to require lading strap anchors on all flat cars built since January 1, 1940, because sufficient time has elapsed to permit compliance.

Rule 3, Section s

Addition of new Paragraph 9 to require that standard mechanical designations be placed on all cars to the right of the nominal capacity. *Also recommended by Operating-Transportation Division.*

Rule 3, Section t

Modification of Paragraph 1-d to prohibit Allied Full Cushion trucks in interchange because sufficient time has elapsed to permit compliance.

Rule 3, Section w

Modification of Paragraph 4 and elimination of note to prohibit cast-iron wheels under 70-ton hopper cars in interchange because sufficient time has elapsed to permit removal of such wheels.

Rule 16

Addition of new third paragraph to give information presently contained in Rule 88 which is to be completely deleted. New fourth paragraph would group items of related subjects to permit improved indexing.

Rule 17, Section e

Modification of the "Coupler Substitution Schedules" following Paragraph 2 to discourage the use of Type D couplers. Modification of Paragraph 9 to facilitate the removal of riveted-type wrought-iron yokes.

Rule 30

Modification would remove mechanical refrigerator cars from same classification as other reefers with respect to periodic reweighing and re-stencilling requirements. The supplies and fittings to be carried on all cars for the calculation of load limits are specified.

Rule 32

Deletion of Paragraph 11 to avoid conflict with Interpretation 11 pertaining to damage of containers on container cars.

Rule 60

Modification of Section m to provide that mandatory cleaning of AB brake equipment will be performed at 48 month intervals instead of the 36 month intervals now standard. *Recommended by Committee on Brakes and Brake Equipment.*

Rule 65

Modification of rule to add "and journal lubricating devices" to coincide with Interpretation 4 of Rule 66.

Rule 66-A, Section j

Modification of the second paragraph to add five additional types of approved journal roller bearing greases. *Also recommended by the Committee on Lubrication of Cars and Locomotives.*

Rule 88

Elimination of entire rule with information transferred to Rules 5, 16 and 87 to eliminate obsolete material, simplify the rules, and consolidate provisions pertaining to repairs of foreign cars in one rule.

Rule 95

Deletion of fifth paragraph and modification of sixth and seventh paragraphs to discourage the use of Type D couplers.

Rule 101

Modification of 17 item in "List of AAR Approved Equivalent Brake Beam Safety Supports" to provide for modified support for spring-plankless trucks. *Also recommended by Committee on Car Construction.* Modification of Items 45-B, 45-C, 54-M to clarify intent, and modification of Items 211, 212 and 213 to provide for credit for No. 2, 3 and 15 brake beams removed when defective.

Rule 112

Modification of Paragraph 1-d of Section A and Paragraph 1 of Section J to provide a more adequate allowance for scrap based on present day values.

Rule 120

Modification of Paragraph g to provide a more adequate allowance for scrap based on present day values and pertaining to material in destroyed or badly damaged cars.

Passenger Car Rule 7

Modification of Paragraph j-1 pertaining to cleaning of air brakes on passenger cars to indicate that on D-22 air brakes, the displacement reservoir diaphragm need not be removed and inspected. *Also recommended by Committee on Brakes and Brake Equipment.*

microinches, maximum. The Committee on Wheels concurs in this action.

Summary of Research Center Report MR-290 covering the economic analysis of overheated journals shows that arbitrary scrapping of all axles with overheated journals would cost five million dollars annually, based on depreciated service life. The report recommends that both magnetic particle and ultrasonic testing be required before returning such axles to service, citing cases of under-surface defects not detectable by magnetic particle testing or surface defects so shallow as to go undetected during ultrasonic testing. The study continues.

No conclusions have been reached in tests to determine the fatigue effects, if any, of scalloping at the wheel fit junction with the "as forged" portion of the axles on alternate standard, raised-wheel-seat, freight axles. There have been no such failures, and preliminary tests show these axles will fail from fatigue at sections other than in the scalloped area. A letter ballot item recommends that the maximum scalloping over the peaks at either end of these axles shall not exceed two inches, and the combined scalloping of the two ends shall not exceed a total of three inches.

Fatigue tests of diesel locomotive axles are continuing and will be given priority over roller bearing journal tests, or the two will be run concurrently if possible. Further investigation of the cause and effects of copper penetration are being made. Analysis of seven cold break journals revealed no actual intergranular penetration. While copper penetration is recognized, actual temperature, stress, and bearing copper content at the time of overheating has not yet been determined.

Methods of inspection of cracked axles are continuing. Only the wet magnetic particle

method will be used, since deficiencies have been found in the dry particle method. An ultrasonic device will then be used for defects not found by the wet method.

The Committee on Wheels is continuing to follow developments in ultrasonic inspections of axles under freight cars and of diesel wheels at manufacturer's plants. Reports from railroads show one defective axle is detected by the use of mobile test units out of every 400 cars checked. As of December 31, 1957, 18,005 ultrasonically inspected wheels had been ordered by the railroads, and their performance is being followed.

Standard Wheel Contour

The committee recommends serious consideration be given to the consolidation of steel wheel tread and flange contours. This would standardize one contour for multiple-wear wrought-steel wheels, one-wear wrought-steel wheels, one-wear cast-steel wheels and steel-tired wheels. The wrought-steel wheel manufacturers would benefit in maintaining one instead of two designs of rolls for tread and flange contour. Railroads could eliminate different styles of wheel acceptance and wheel mounting gages.

The committee has determined that cast steel wheels, Types A and B, having defects such as slid flats and built up treads can be reclaimed. Turning is done at speeds comparable to those for one-wear, wrought-steel wheels. Carbide tools are successfully used and can be reclaimed by the normal grinding procedure. The wheels must be carefully inspected to determine the extent of damage and whether reclamation is economically justified. In restoring the contour, the apex of the flange should not be disturbed.

Wheel and Axle Manual

The completely revised edition of the Wheel and Axle Manual to be effective January 1, 1959, will consolidate the present twenty-one sections into seven with related sub-sections. Bolder type will be used. Section XX—Mandatory Rules Governing Wheel Shop Practices—will become Section 1, and will be printed on colored paper.

Recommended letter ballot items include change in Rule 355 (e) establishing an entering taper on wheel seats consistent with the size of axle; change in Rule 355 (o) to make mandatory the wet method of magnetic particle testing for locating surface induced defects in axles rather than the dry powder method, and modification of Par. 363 (e) to provide that journal protective coating is only to be applied to wheel sets just mounted, mounted wheels in storage, and those in transit for application.

Reconditioned Draft Gear

The Committee on Couplers and Draft Gears has recommended a letter ballot item, revision of Specification M-901-B to provide a test for capacity of each reconditioned draft gear instead of 20 per cent of any lot of gears. If any gear fails to pass the test, it must be reworked and retested. An alternate simplified test can be used where no other information is required other than to determine if the gear passes the specification requirements.

In testing reconditioned draft gears at shops and reclamation points, the AAR Research Center has concluded that the 9,000-lb free fall vertical tup is less costly and the most satisfactory means that can be used.



C. E. Pond

Chairman Reports . . . N&W Lubricators Perform Three Times Better

C. E. Pond, chairman of the Mechanical Division and general superintendent motive power of the Norfolk & Western, told of his road's experiences with lubricators and discussed other experiments being carried on with the solid bearing assembly.

Norfolk & Western has 50,631 cars fitted with lubricating pads—81.5 percent of its freight car fleet. All cars were to have them this year but recession has delayed the program. Over 29 months, pad cars operated an

average of 3,186,494 miles per set off and waste-packed cars 1,072,006 miles—a ratio of three to one.

Pads are serviced at two major points. Coal loads moving to the East coast are serviced at Bluefield, W. Va., for 825 mile round trip which finally takes them empty to the mines and under load back to Bluefield before additional servicing. A similar practice at Williamson, W. Va., readies coal loads for 775 mile trip to Great Lakes ports and back to mines. This contrasts with hooking and servicing of waste-packed boxes about once each 100 miles.

"There is still room for improvement in the various type pads," Mr. Pond continued. "The wicking characteristics of the pads in cold weather are far from satisfactory. In each of the three winters we have been operating pads, there have been two or three months when the waste packed mileage was higher than the pad mileage." AAR Mechanical Division is working up a specification for lubricators which will include a cold wicking test.

Since the lubricator pad program started, oil consumption has climbed. From 1932 to 1954, one gallon of car oil was used each 1,620 freight car miles. From 1954 to date, the average has been 720 miles per gal. The Lubrication Committee is studying the proper oil level to be carried and this can help. If lubricator has free oil passages from end to end, it will waste more oil, Mr. Pond warned.

N&W operates 500 70-ton hoppers with controlled-clearance bearings, 50-in. wedges, pads, journal stops, good dust guards, and lid seals. Six months service shows the oil is

being retained. "While results are encouraging," Mr. Pond reported, "there is some question if the railroads can afford to apply all these refinements to the conventional journal box assembly."

On 100 70-ton hoppers, flat-back controlled-clearance bearings, 50-in. wedges, pads, and good front and back seals are being used to see if the greater contact area of the flat-back bearing will prevent movement of the journal relative to the box enough to protect the back seal. They are showing no oil on the wheel plates so far.

On 200 new 70-ton hoppers N&W is going to compare AAR standard bearing with pre-war designs—both with and without center loading pads. This will attempt to produce uniform loading through the length of the journal.

Reclamation is being done successfully on lubricator pads. Plants at Roanoke, Va., and Portsmouth, Ohio, have reclaimed over 82,000 pads and scrapped about 6,000—7.3 percent. Some progress has been made at salvaging damaged pads. This damage is usually due to the use of packing irons and to rough axle collars and fillets.

"We have thought the freight car oil specification needs revision. . . Tests disclose that better results can be obtained with two grades of car oil rather than one," Mr. Pond stated. "The winter grade oil should have a viscosity of 44 to 46 and the summer grade from 68 to 70 sec at 210 deg F."

"I urge member roads and private car lines to accelerate the application of lubricating devices," Mr. Pond concluded, "so all railroads can effect savings in hot boxes and servicing costs."



Tooling Up...

"Now wait a minute, Jim," Pete stopped him, "those little cans of Freon we carry in stock are not good enough."

ONE MORNING early, our friend, Pete, walked into the office where Big Jim, the boss, was busy at his desk. "Jim," Pete began, "I've been thinking that if we're to continue trouble shooting and working these mechanical refrigerator cars, we should have some special tools and supplies." Still fresh in Pete's mind was a midnight session with a mechanical reefer failure only two days before.

Jim looked up from his work but didn't answer for several seconds. "It's possible," he finally replied, "but just what did you have in mind? Sit down, Pete, and let's talk this over."

"Jim, all these reefer systems use Freon as a refrigerant. It changes from a liquid to a gas and back to a liquid," Pete explained. "This is done by a change of pressure and transfer of heat. To tell how such a system is doing, these pressures should be known. A pair of test gages mounted on a gage manifold with three hoses is one outfit we do need. One of the hoses is used to connect to the refrigerating system, the second for connecting the gages, and the third to add more Freon through that test gage manifold.

"Refrigeration wrenches are the only tools that should be used on this equipment. To try to use adjustable wrenches, or, worse yet, other types of tools on refrigeration fittings will ruin the fittings so no tool will work on them. Then, Pete continued, "we should also have a Halide leak detector, a torch-like gadget with a sniffer tube. There are two models available. One is an alcohol torch and the other gets its fuel from a small propane tank. This is used for locating leaks in refrigeration systems."

Big Jim broke in at this point. "Pete, do you really think we need all of that stuff?"

"Sure, Jim," Pete answered. "I am certain that these are things we ought to have. We should, that is, if we are

to do any good at all. Two other things we should have are a clamp-on ammeter and a cycle meter."

"But, Pete," Jim interrupted, "we have a clamp-on ammeter!"

"We do? I haven't seen it."

Jim told him that one of the gangs had one and used it regularly. It would be available. "But now," he continued, "what do we need a cycle meter for?"

"If you will remember, Jim, most of these refrigerator cars have the diesel engine driving an alternating current generator. This power is then used to drive all the other equipment. The speed of the diesel determines the number of cycles that the alternator puts out. If the engine speed is low, the cycles are low; if the speed is high, then the cycles are high. In alternating current machines, low voltage and low frequency may not permit motors to start readily. Resulting overloads can trip circuit breakers causing car failures. If we have a condition where the circuit breakers are tripping, we should know that it isn't low engine speed," Pete concluded.

"Couldn't we use the tachometer that we already have?" Jim asked.

"We could," Pete replied, "but it is not easy to apply a tachometer to some of these small engines."

Jim wrote down the cycle meter, but put a question mark behind it and then said, "Is that all we need?"

"For the time being that will give us the tools we need for trouble shooting. If we have to start maintenance of these mechanical reefers, then we will have to get some other tools. As for supplies, Freon-12, refrigerant oil and permanent antifreeze should be available."

"We keep Freon on hand," said Jim. "We have antifreeze here in the winter but not during hot weather."

"Now wait a minute, Jim," Pete stopped him. "Those little cans of Freon we carry in stock are not good enough.

Some of these mechanical refrigerator cars take as much as 75 lb of refrigerant. And as for the antifreeze, these cars use it year 'round. It is a 50-50 mixture to prevent corrosion, pitting and scaling of the engine's cooling system. It has to be mixed before it is put in—a quart of antifreeze and a quart of water or a gallon of antifreeze and one of water."

"OK, Pete. Now what about this refrigerant oil? Why would we need that?"

Pete pointed out that the compressor has its own lubrication system. It is a closed system and actually no oil is ever lost or used except when a Freon leak occurs. When this happens, both the Freon and oil are lost. "Whenever refrigerant must be added, oil is added along with the refrigerant," Pete concluded. "The Freon then carries the oil with it throughout the system."

The two talked some more about equipment and supplies and how they should be ordered. Jim stated that more of these cars were being built; more would be running on their line, and more and more frequently they would be called upon to do work on them. Finally, he asked if Pete wouldn't help by holding a short class session about once a week so that everybody would have the background for work on these cars.

"That does it!" Pete grumbled. "Try to help you out and you give me more work! I don't know enough to teach anybody."

"Now look, Pete," Jim said, "you have taught me quite a bit in these few minutes we have been talking. Maybe you don't know all of it, but you know more than the rest. If we all get our heads together and study together, we'll all gain. You will, too. Now, what do you say?"

"Oh, all right! You won't let me rest till I agree with you," Pete conceded. "Have you got any equipment manuals that I can study?"



Above is one of the switching locomotives the Lehigh Valley has received through its power renewal program. Unit replaces 20-year-old switcher shown at left.



New locomotives for old . . .

The Lehigh Valley, through a planned program of power renewal, is acquiring a new switching fleet by turning in twenty-year-old locomotives on the purchase of new locomotives that contain certain remanufactured components.

Under this program, old locomotives are turned in one or two at a time. New Power is thus acquired gradually with minimum out-of-service time.

Many roads are taking advantage of the value in their old freight, passenger, and switching locomotives by acquiring more efficient and more powerful Diesels, equivalent of today's production standards. For details, call your Electro-Motive representative.

GENERAL MOTORS
LOCO. MOTIVES

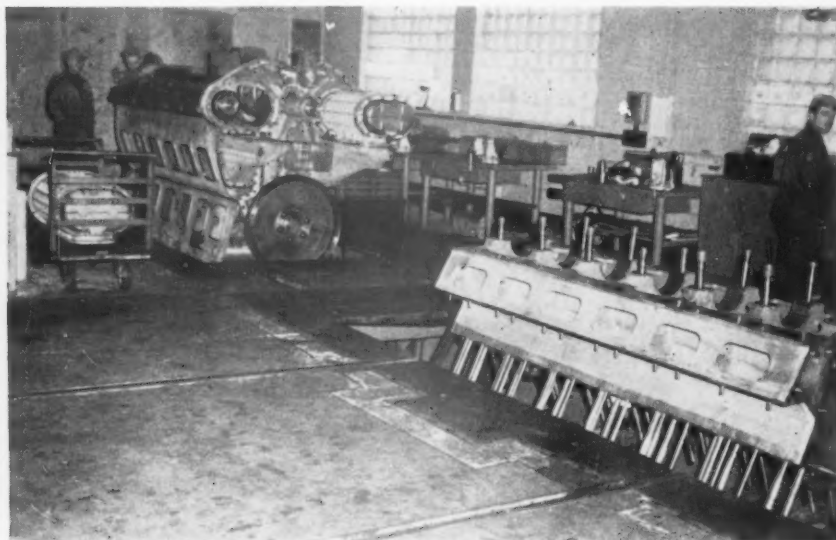
ELECTRO-MOTIVE DIVISION GENERAL MOTORS

LAGRANGE, ILLINOIS • HOME OF THE DIESEL LOCOMOTIVE

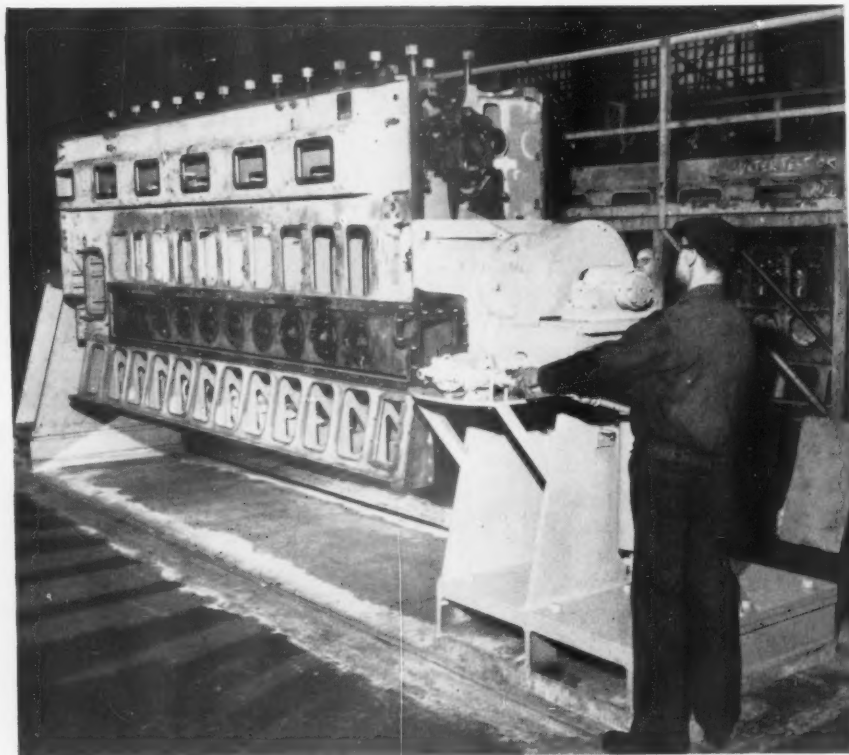
In Canada: General Motors Diesel Limited, London, Ontario

DIESEL REPAIR TIME-SAVERS

Positioning Crankcases

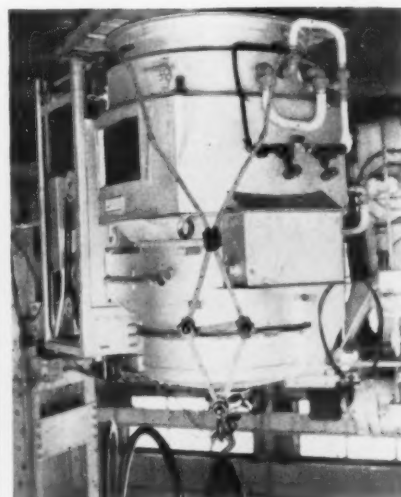


UNION PACIFIC has six pits in its Omaha, Neb., diesel engine rebuilding shop. These are arranged so that the base of the engine can be positioned at any location from floor level to 4-ft 3-in. below. This simplifies stripping and assembly.



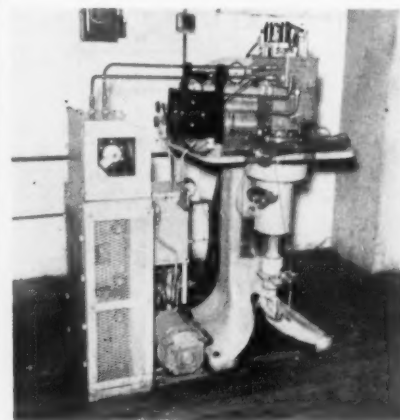
PENNSYLVANIA designed and installed this Fairbanks-Morse engine-frame turning device at the Altoona, Pa., shop. Frames can be rotated to any position for installation of components. This has made it unnecessary to use the overhead cranes, making it possible to do the work faster and with greater safety.

Lifting Generator Coils



CHICAGO & EASTERN ILLINOIS uses this toggle-jointed coil lifter at its Danville, Ill., shop. The device is made of $\frac{3}{8}$ by $\frac{3}{4}$ -in. steel. It removes the outer, intermediate, and inner steam generator coils for repair. The positive clamping action on each coil nest makes this device superior to the two-hook chain formerly used. It is easily operated by one man.

Testing Governors



READING altered the conventional Woodward governor test stand at its Reading, Pa., shop to permit complete testing. A small tank equipped with a 110-volt immersion heater supplies oil at about 190 deg F. While the governor is being set, the oil is circulated with a standard locomotive fuel pump. Setting with warm oil makes it possible to install these governors on locomotives with little subsequent adjustment. Power piston operation is checked by coupling its oil lines to a standard EMD load regulator installed beside the test stand. Calibration of the low oil shut-down is checked by bleeding off oil pressure developed by the fuel pump through a needle valve. The pump is now driven by a 110-volt a-c motor instead of the original 74-volt d-c type. Governor oil suction shut-down is tested with a line coupled to the suction side of the fuel pump.



New SPERRY REFLECTOSCOPE cuts time and cost on axle testing

Designed specifically for railroad use, the Type US Sperry Reflectoscope offers a faster, simpler, more accurate and more economical means of testing. Axles can be tested "in place" on locomotives or cars, resulting in major maintenance economies by detecting hidden flaws before they cause costly failures or breakdowns.

The Sperry Reflectoscope offers these advantages:

*Complete portability...weighs only
35 pounds*

*Low power consumption...built-in
voltage regulation*

Simplified four-knob control panel

*New, completely transistorized
plug-in alarm system...eliminates
possibility of human error*

*Bright...easy to read video pre-
sentation*

Sperry Reflectoscope Type US is another fine example of Sperry Rail Service's "engineering exclusively for railroads." If you're interested in cutting maintenance costs and achieving maximum equipment utilization, send for details of this outstanding inspection tool.

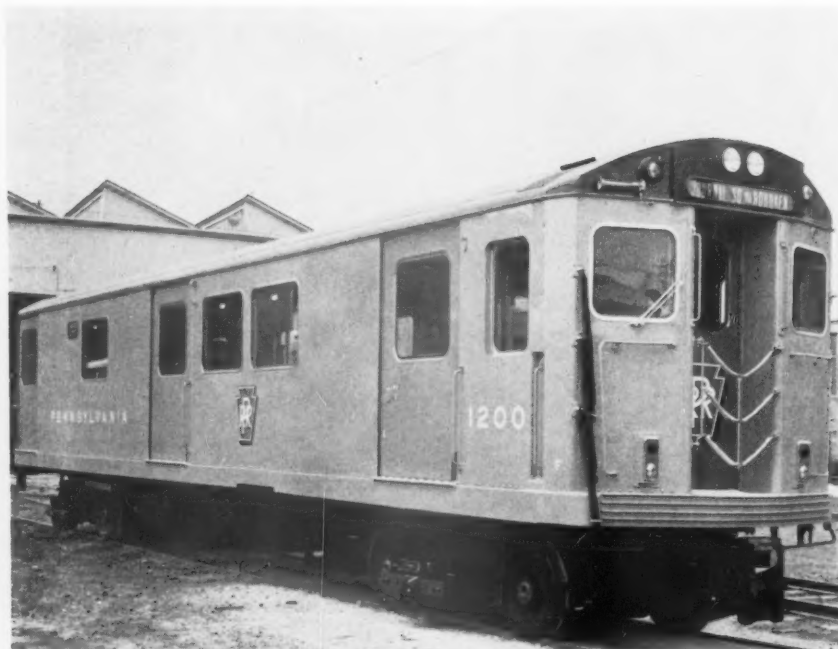


SPERRY RAIL SERVICE

SUPPLYING RAILROADS EXCLUSIVELY

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ELECTRICAL SECTION



First of the 50 air-conditioned cars which will have gray bodies and blue doors. Only 30 carrying PRR emblems will have cab signal equipment.

Partial List of Suppliers

Axles and wheels	U. S. Steel Corp.
Journal bearings	Timken Roller Bearing Co.
Shock absorbers	Houdaille Industries
Traction motor drive	Spicer Div., Dana Corp.
Truck frames	General Steel Castings Co.
Truck springs	Crucible Steel Co.
Body insulation	Gustin-Bacon Mfg. Co.
	Owens-Corning Corp.
Doors	O. M. Edwards Co.
Floor tile	Armstrong Cork Co.
Headlining	Formica Co.
Paint	Sherwin-Williams Co.
Seats	Heywood-Wakefield Co.
Seat covering	DuPont Co.
Seat cushions	Goodyear Co.
Steel sheets	Armco Steel Corp.
Steel trim, stainless	Rigid Metals Textures
Window sash and hardware	Adams & Westlake Co.
Air brakes	Westinghouse Air Brake Co.
Brake shoes	Railroad Friction Products Co.
Couplers	Westinghouse Air Brake Co.
Draft gears	Waugh Equipment Co.
Hand brake	National Brake Co.
Air conditioning	Safety Industries, Inc.
	Trane Co.
Air conditioning and heating controls	Vapor Heating Corp.
Heaters	Railway Utility Co.
Batteries	McGraw-Edison Co.
Lamp regulator	Safety Industries, Inc.
Light fixtures	Electric Service Mfg. Co.
Head lights	Pyle-National Co.
Traction motors, controls, wire and cable	General Electric Co.

First Air-Conditioned Transit Car Fleet

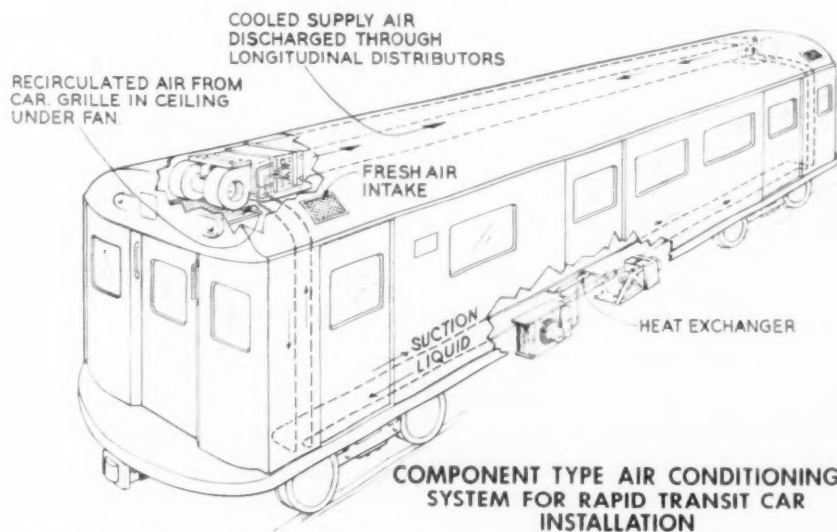
DELIVERIES of 50 air-conditioned, rapid-transit cars for the New York City to Newark, N. J., operation of the Hudson & Manhattan Railroad are now under way. With these new St. Louis-built units, this line will become the first transit service exclusively operated with a fleet of air-conditioned cars.

The introduction of new equipment coincides with the 50th anniversary of the road's opening. The H&M (popularly known as The Tubes) connects two New York terminals with the New Jersey cities of Hoboken, Jersey City, and Newark. In Jersey City, Hoboken, and New York this is a subway operation. On the nine-mile Newark run, trains operate on a Pennsylvania Railroad surface line after leaving Jersey City. This Newark-New York operation serves as a downtown New York connection for Pennsylvania trains from the south and west. Thirty of the 50 new cars are owned by the Pennsylvania, and 20 by the operating company—the Hudson & Manhattan.

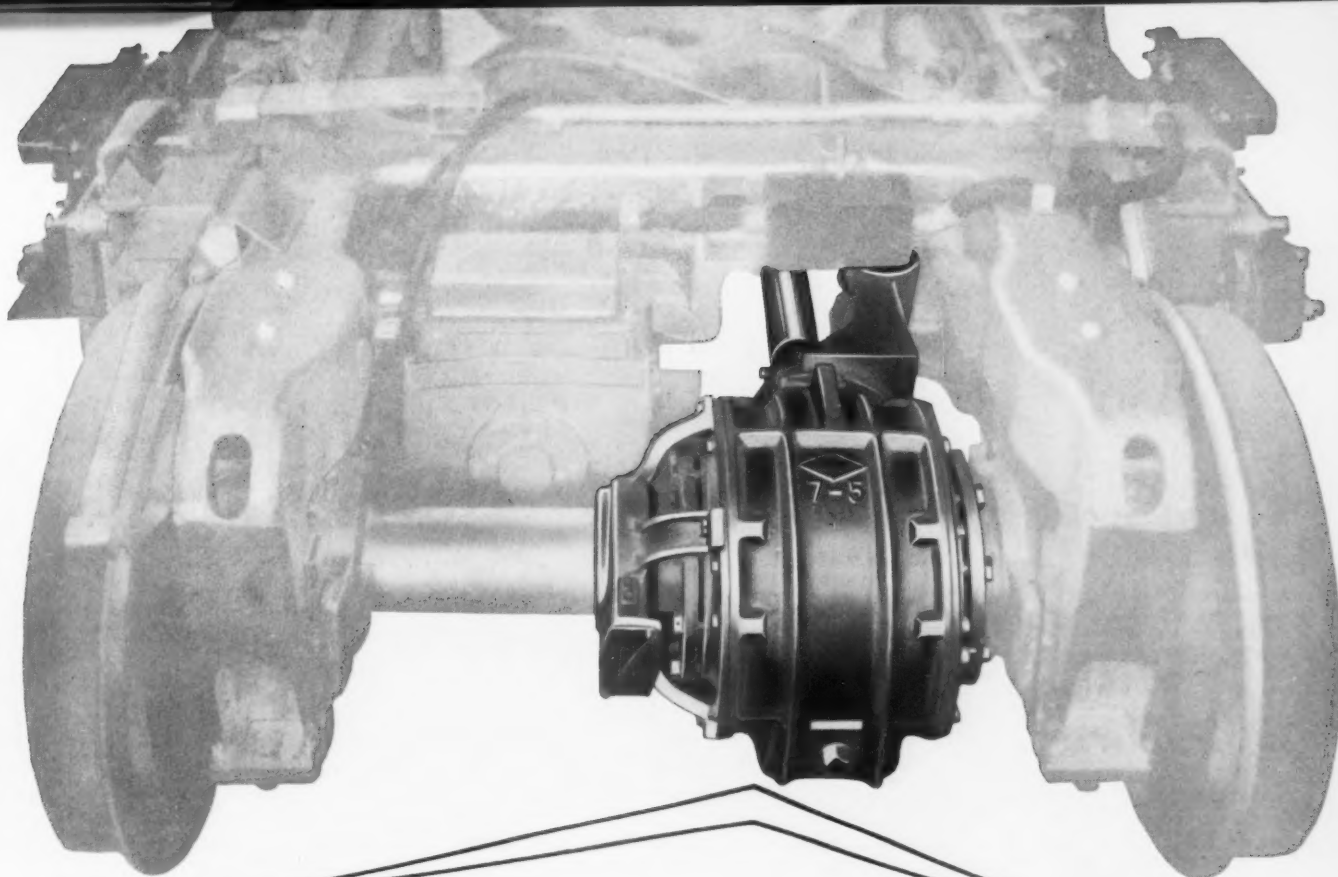
Because of the H&M bankruptcy,

purchase of the new cars was the subject of a study authorized by the Federal District Court. When the court ordered

the trustee to solicit bids for this equipment early in 1956, it also directed that a firm of consulting engineers make



This Safety Industries component arrangement, with duct type air distribution, was utilized on all PRR and H&M cars.



Make way for Lightweight Design with Spicer Traction Motor Drives

Spicer Traction Motor Drives play an important part in reducing the cost and weight of the newest self-propelled Rapid Transit cars being produced by the Pullman-Standard Company. 50 of the new cars are already in service for the Metropolitan Transit Authority of Boston, Massachusetts.

These cars employ high-speed, lightweight motors which are coupled by Spicer high-speed propeller shafts to Spicer Traction Drives. The drive permits the application of inboard bearing trucks which provides weight and cost saving features.

The Spicer Traction Drive permits maximum ac-

celeration through a single set of gears with optional ratios to match train schedules ranging from 5.88 to 1 up to 8.9 to 1.

To insure maximum performance, the Spicer assembly is delivered complete — ready to be secured on the axle. No further adjustments are necessary, for each set of gears has been mated, factory-adjusted and tested under actual running conditions.

If you're interested in cost and weight savings, as well as maximum efficiency from railway traction drives, write for the latest Spicer Technical Bulletin. The address is Dana Corporation, Toledo 1, Ohio.

DANA CORPORATION • Toledo 1, Ohio

DANA PRODUCTS Serve Many Fields:

AUTOMOTIVE: Transmissions, Universal Joints, Propeller Shafts, Axles, Powr-Lok Differentials, Torque Converters, Gear Boxes, Power Take-Offs, Power Take-Off Joints, Clutches, Frames, Forgings, Stampings.

INDUSTRIAL VEHICLES AND EQUIPMENT: Transmissions, Universal Joints, Propeller Shafts, Axles, Gear Boxes, Clutches, Forgings, Stampings.

AVIATION: Universal Joints, Propeller Shafts, Axles, Gears, Forgings, Stampings.

RAILROAD: Transmissions, Universal Joints, Propeller Shafts, Generator Drives, Rail Car Drives, Pressed Steel Parts, Traction Motor Drives, Forgings, Stampings.

AGRICULTURE: Universal Joints, Propeller Shafts, Axles, Power Take-Offs, Power Take-Off Joints, Clutches, Forgings, Stampings.

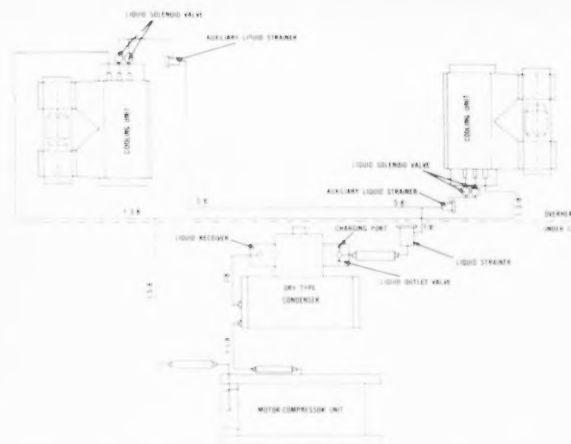
MARINE: Universal Joints, Propeller Shafts, Gear Boxes, Forgings, Stampings.

Many of these products manufactured in Canada by Hayes Steel Products Limited, Merriton, Ontario





Air-conditioned interiors are colorful. Formica ceilings are pearl gray. Individual cars are finished in one of three basic color schemes: blue, turquoise and aqua, or coral and rose. Air enters through two Safety continuous ceiling-mounted diffusers.



Installation with Trane equipment involves compressor driven by 12.5-hp motor, air-cooled condenser with fan powered by 1.5-hp motor, and two separate evaporator units each having two fans mounted on double-shaft extensions of $\frac{3}{4}$ -hp motors.

studies of continuing the joint H&M-PRR service and of the purchase of new cars.

A favorable report led to the order for 50 cars from the St. Louis Car Company late in 1956. H&M expenditure was to be \$1,700,000 for its 20 cars, and the Pennsylvania authorized \$2,600,000 for its 30 units. To make service on this run as attractive as possible, it was decided that the new cars would be air conditioned. This had already been studied with successful test installations on two existing H&M cars in 1956 (*Railway Locomotives and Cars*, March 1957, p. 56).

Car Design

The new cars are of the PCC rapid-transit type based on TRC design and modified to meet ICC strength requirements. Buffing strength of 400,000 lb was checked at the AAR laboratory in Chicago by testing the first car. The design and size of these cars make them similar to units recently placed in service by Chicago and Boston transit systems. Overall length is 51 ft 3 in.

The cars are built of Armco HT50 low-alloy, high-tensile steel, and the two-cab models weigh 69,300 lb. Ten have two cabs, making them capable of single-unit operation. The other 40 single-cab cars are to be assembled in 20 semi-permanently coupled pairs. One car of each two-unit set will have the Westinghouse compressor for both cars, and the other will carry the motor-generator set and the Edison battery for the pair.

Up to eight cars can be operated in multiple unit. Waugh rubber draft gears and Westinghouse Air Brake H-2-C automatic couplers with integral air connections are used throughout. Control

jumpers will be used only between the cars of the two-unit sets, because the couplers at the cab ends of all cars will have integral, electric train-line connections.

Each car is powered with four General Electric 100-hp, longitudinally-mounted, transit motors which drive through Spicer right-angle, hypoid-gear units. Acceleration is 2.5 mph per sec; and maximum speed is 60 mph. Trucks are of General Steel's transit design with inboard, 5-in. x 9-in. Timken roller bearings; 28-in. cylindrical tread, wrought-steel wheels; and coil-spring suspension. Wheel base is 6 ft 10 in. and truck center distance is 33 ft.

A Westinghouse Air Brake SMEE electro-pneumatic, variable-load, straight-air brake system with ME-42 brake valve operates in conjunction with dynamic motor braking to produce a maximum deceleration of 3 mph per sec. An individual Westinghouse, package tread-brake unit with Cobra shoe is applied to each wheel.

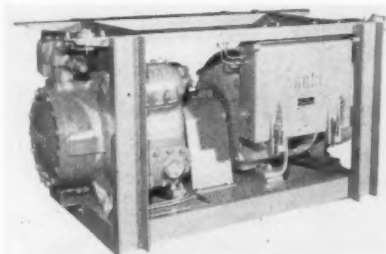
The cars are designed to seat either 44 or 46 passengers and accommodate a maximum of 152. Instead of being directly opposite each other, side door openings are staggered to facilitate rapid loading and unloading. The sliding side

doors have electric door engines.

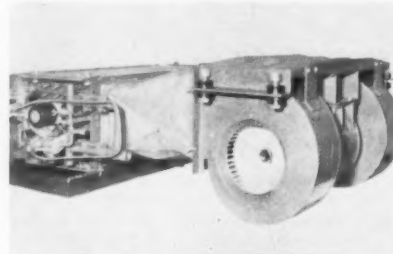
Cleaning has been simplified and interior repainting virtually eliminated with this car design. Ceilings and window sills are integrally colored Formica. Scuff plates, handholds and trim are stainless steel, and the floors colorful vinyl-asbestos tile. The longitudinal seating is upholstered in vinyl-plastic Fabrilite over foam-plastic cushions. Two rows of ceiling-mounted incandescent lighting fixtures illuminate the interiors. Passenger compartment windows are fixed, single-pane Adlake units. Attractive pastel color combinations are used throughout the interiors.

Air Conditioning

Air conditioning of rapid transit cars is not a simple problem. The side door opening area, the frequent stops, and the high passenger load make it necessary to provide much greater cooling capacity than would be needed for more conventional railway equipment of comparable size. Rapid changes in passenger loads and the combinations of above-ground and tunnel operation complicate temperature control problems. Nominal 600-volt d-c third-rail voltage, which actually swings between 450 and



Compressor units mounted under PRR cars have four-step unloaders for automatic capacity modulation.



Two of these Safety Type ACMX overhead evaporator units, each with a capacity of 4.5 tons, are used on each H&M car.

FOR NEW ENGINE PERFORMANCE AND RELIABILITY...

Insist on genuine
FAIRBANKS-MORSE
O-P DIESEL
REPLACEMENT PARTS

Replacement parts or accessories...you *know* they're right because they are made specifically for your Fairbanks-Morse O-P diesel. They are your guarantee of new engine performance.



**F-M quality and precision
backs up each part and accessory**

In the photo above a tiny screw thread is magnified and projected upon a calibrated screen. Any dimensional errors are immediately detected by this process. It's an example of the painstaking quality control and maximum precision built into every F-M part. It's one of the reasons why it pays to insist on genuine Fairbanks-Morse replacement parts and accessories.

So when it is time for repairs, use parts that are built to the same high standards and are made of the same top-quality materials as the original parts. Use only genuine Fairbanks-Morse replacement parts.

Fairbanks, Morse & Co., 600 So. Michigan Ave., Chicago 5, Illinois.



FAIRBANKS-MORSE

a name worth remembering when you want the BEST

DIESEL LOCOMOTIVES AND ENGINES • MOTOR CARS AND RAILROAD EQUIPMENT • ELECTRIC MOTORS • GENERATORS • PUMPS • SCALES • WATER SERVICE EQUIPMENT • HAND LAMPS

700 volts, makes the successful operation of motors a problem.

The 10-ton systems installed on the new H&M equipment are made up of components much like those found on standard railroad passenger cars. The motor-driven compressor and condenser are located under the car body. Two overhead evaporator-blower assemblies feed from both ends into a duct running the length of the car ceiling and split diagonally so each cooling unit delivers some air through the entire car body. This equipment weighs approximately 2,500 lb.

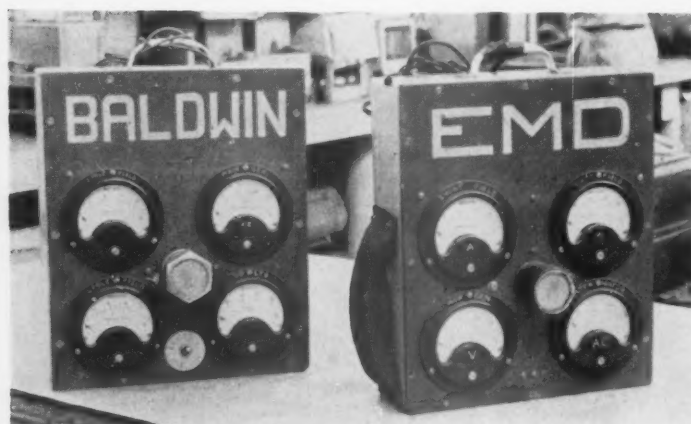
Each evaporator cooling coil is split horizontally into two sections, and each

section has its own expansion valve and solenoid liquid valve. Each cooling unit also has an electric heating section which is also split into two sections. This overhead heating system is supplemented with 20 panel-type floor heating elements, mounted under the seats, with maximum capacity of 13,500 watts. Cooling and heating controls are supplied by Vapor Heating Corporation.

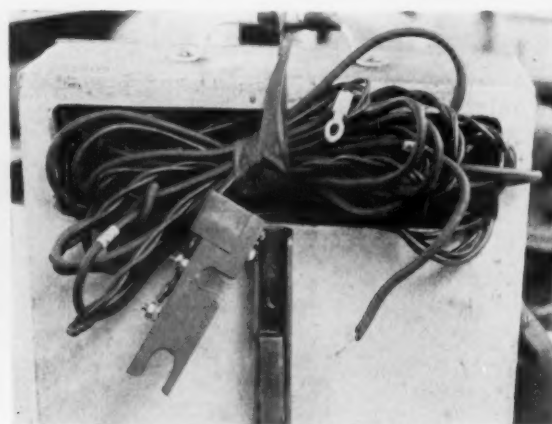
The solenoid liquid valves of the two upper cooling coil sections are opened when car temperature reaches 76 deg F and cooling begins. If the temperature reaches 78 deg F, the lower sections are brought into use. This process is reversed as car temperature goes down.

Each overhead unit provides 1,500 cfm total air flow, or 3,000 cfm for the car. This is a mixture of 1,200 cfm of filtered outside air and 1,800 cfm of filtered recirculated air, making a complete change of air at least once each minute. There are exhaust grilles, but no exhaust fans because the system is designed to pressurize the car body slightly. This means that air will be exhausted through open doors at stops, and will prevent outside air from entering the car.

Tests indicate that a system of this type will provide temperature and humidity control for all passenger loads and for both tunnel and surface or elevated operation.



Two of the three portable meter boxes used in making engine-generator load tests on diesel-electric locomotives.



Rear view of one of the meter boxes. Special polarized meter terminals prevent incorrect application of meters.

Meter Boxes Aid Load Tests

WHEN LEAD TESTS are made on overhauled diesel locomotive engines and generators, it is necessary to record voltage and current output of the generator in order to determine engine performance. It is also desirable to make a number of meter readings such as generator field current, auxiliary generator voltage, battery field current, etc.

When such tests are made in the Glenwood Shop of the Baltimore & Ohio at Pittsburgh, the generators are loaded on General Electric portable resistors. These are equipped with an ammeter and a voltmeter to show the total load.

It has been the practice to use portable instruments to make the other readings, but difficulties are encountered doing it this way, in that the meters are subject to damage in handling, and

sometimes are applied to the wrong circuit, with the result that the meter is destroyed. Furthermore, each of the three different makes of locomotives which are tested at Glenwood requires certain specific meters, and it was necessary to select the correct meter for each test.

To take care of this situation, a meter box was made for each of the three types of locomotives. Two of them are shown in the illustration, the one on the left for Baldwin, and the one on the right for EMD locomotives.

The meter at the upper left in the Baldwin box is a 0-15-amp d-c ammeter for measuring 2-pole field current. The one at the upper right is a 0-50 millivolt d-c meter which, with a shunt, measures main generator current. At the lower left is a 0-15-amp d-c ammeter for measuring 4-pole field current.

The upper left-hand meter in the EMD box is a 0-50 amp d-c meter for measuring shunt field current. The one at the upper right is a 0-50 millivolt d-c meter and shunt for measuring battery field current. The meter at the lower left is a 0-100-volt instrument for measuring auxiliary generator voltage. At the lower right, is an a-c meter with a 0-250-volt scale for measuring alternator voltage.

Each meter is fitted with leads having the proper terminals. All terminals are marked, and as many as possible are polarized. All meters are fused. This includes voltmeters.

The boxes have proved to be valuable time savers and have reduced meter casualties practically to zero. The boxes were designed and built by R. A. Wheeler, foreman, and Joseph Fabian, electrician.



WHY 20 ROADS ARE TESTING NATIONAL CARTRIDGE BEARINGS

Combines the ruggedness of the solid bearing with the advantages of a sealed unit — at a much lower cost!

That's the reaction we've been getting from the twenty railroads now testing the National Cartridge Bearing . . . a truly rugged, completely sealed and self-lubricated bearing—at much lower cost than roller bearings.

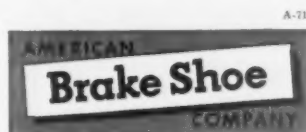
With its large 270° bearing surface, tough bronze parts, simple construction, and flat back design, the National Cartridge Bearing is far better able to stand up to impact than roller bearings.

The unit is so effectively sealed that it can go for months between oil checks. In the meantime no other inspection is needed. Cars equipped with the National Cartridge Bearing can be dumped without losing a drop of oil.

Installation is a cinch too. Only five simple parts and seven screws to the entire assembly. Slips on and off in a

hurry, without need of special tools or facilities. Fits inside of the standard journal box after the dust guard well has been removed . . . or under pedestal side frames, either narrow or wide jaw, with the use of simple adapters.

It's easy to see why twenty roads are testing the National Cartridge Bearing—it looks like the journal bearing of the future!



RAILROAD PRODUCTS DIVISION
530 Fifth Avenue, New York 36, N. Y.

Extension Cord Ties Diesel to Its Load



By Gordon Taylor

WHEN ENGINEER Casey and Fireman Brown arrived at their home terminal with a three-unit EMD freight locomotive, an hour late, they reported a case of diesel trouble. Their story was about as follows.

The rear trailing "B" unit had failed about half way over the division. The locomotive had first given notice of trouble when it started slowing down, showing a lack of power. The fireman checked the trailing units and found that the rear unit engine was running but that none of the power contractors were cutting in. In other words, there was no way of getting power to the traction motors.

Now the fireman knew that it was necessary for the reverser to be thrown in either forward or reverse direction to pass power to the traction motors. He inspected the reverser and found it was in the forward position which was correct for the operation of this unit. He also knew that the *FO* trunk wire leading to the *FO* magnet valve should be energized to pass control current both *C-D* interlock on top of the reverser

to the isolation switch, and so to the control circuit to bring in the power contractors.

Since the *FO* wire was apparently dead on this unit, the fireman naturally thought that the jumper control cable might be bad order. He then changed jumper cables but that did not cure the trouble.

By this time, the train had reached a point where a wayside telephone was available. The train was stopped and the crew notified the dispatcher to have an electrician meet the train at an intermediate servicing station about 15 miles away.

This was done, and electrician Bill Sparks was waiting when the train arrived. Bill heard the fireman's story and checked it out, finding the facts to be as stated by the fireman. Bill was faced with finding where the *FO* wire was open-circuited in the trunk cable. That could take a great deal of time and there was no time to waste. Something had to be done quickly or it would be necessary to set out part of the train. They could not afford to continue the trip at such slow speed.

Bill first thought that if the unit could be turned around, that it might operate okay, if the *RE* wire was all right in the trunk cable. It was a good thought, but there was no wye or turntable to turn the unit, so that idea had to be dropped.

Bill then said, "If there were only some way we could get a temporary connection from the positive side of the battery, to the *C-D* interlock on the reverser, we could then energize the power contractors." Then he had the idea that proved he was a real trouble shooter.

Why not rig up a light extension cord with just one wire, attached to one pole of an attachment plug. Then plug it into the engine room lighting circuit and attach the other end to the *C-D* interlock at the top of the reverser. This was quickly done. When the attachment plug was plugged into the receptacle, nothing happened. Bill said, "I guess we are connected with the negative side of the circuit." He quickly pulled the plug and turned it around to the opposite slot in the receptacle. When he plugged it in the second time, that did it. Current from the positive side of the battery could now flow through the *C-D* interlock and energize the power contractors.

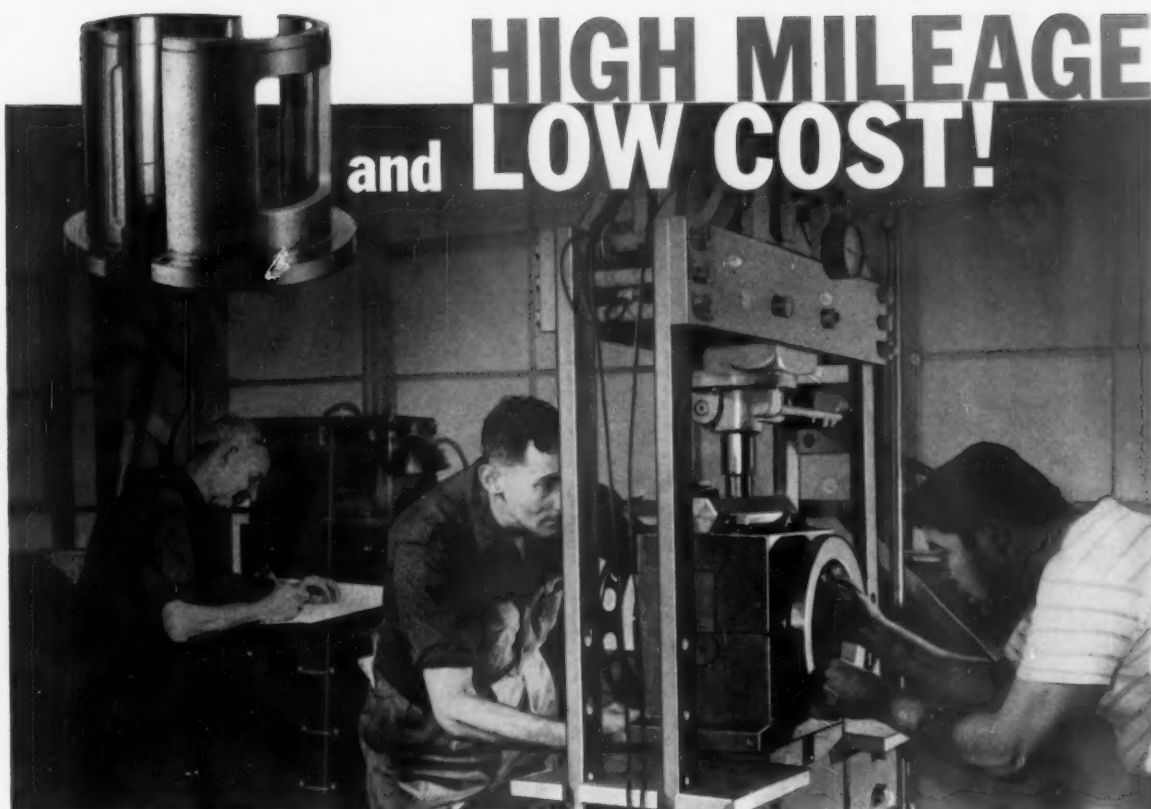
Now when the engineer opened the throttle to Run 1 and, with the transition lever in No. 1 position, he could put the rear trailing unit to work. The piece of light cord had tied the engine to its load and the locomotive could proceed with full tonnage.

At the home terminal, at the end of the run, the electricians had plenty of time to locate the open circuit in the *FO* wire. It was found to be broken at the point where it was attached to the terminal board located near the ceiling in the end of the carbody.

This was an unusual case, but it shows what can be done by a trouble shooter who is familiar with schematic wiring diagrams and really understands the diesel control system.

A thorough knowledge and understanding of control circuits is a large part of the ammunition carried by a successful trouble shooter on diesel locomotives. It pays to start out with a good supply of ammunition,—but,—do not attach jumper wires to or around contactors in the control system unless you thoroughly understand the circuits. Otherwise you may do more harm than good.

This series of articles is based on actual experiences of men who operate and maintain diesel-electric locomotives.



Here's why Diesels, Electrics and MU Cars can all get maximum, trouble-free mileage with Magnus Traction Motor Support Bearings

Major roads from coast to coast have found that they can be sure of maximum mileage between overhauls by replacing only with genuine Magnus High-MILEAGE Bearings. This performance is possible because Magnus puts extra care and precision into every bearing. Here are just a few of many Magnus features that mean more trouble-free miles and lower over-all costs.

Satco Lining Metal This patented, heat-resisting bearing metal, centrifugally applied by bearing experts, gives greater resistance to wear and load, plus stronger bonds and increased hardness at elevated temperatures.

Interchangeable Double Keyway Pioneered by Magnus, this improvement permits complete interchangeability between commutator and pinion shaft ends. Simplifies motor maintenance and bearing stockpiling.

Perfectly Mated Bearing Halves Flaw-free, fine-grained castings are finish bored for maximum uniformity of wall and flange thickness. Mated bearing halves are micrometer tested *under load*, assuring parallel ID and OD and uniform loading of each half.

Straight Bore or Hour Glass Design Many railroads today still prefer the straight bore design and now

Magnus is your only source for these bearings. Magnus gives you either type — to your specifications.

Magnus Bearings are now available for replacement on all types and makes of diesel electric and electric locomotives and MU cars. And because of Magnus' streamlined production methods, new bearings cost so little that it doesn't pay to reline or rebuild old ones.

For the complete story on Magnus High-MILEAGE Traction Motor Support Bearings, write for Bulletin No. 6000. Magnus Metal Corporation, 111 Broadway, New York 6; or 80 E. Jackson Blvd., Chicago 4, Ill.



MAGNUS
High Mileage

TRACTION
MOTOR SUPPORT
BEARINGS

MAGNUS METAL CORPORATION *Subsidiary of* NATIONAL LEAD COMPANY

A NEW FIBER GLASS INSULATION

developed specifically to meet the requirements of the

TRANSPORTATION INDUSTRY



- Highly efficient
- Moisture resistant
- Vibration resistant
- Durable
- Extremely lightweight
- Easily installed

WHAT IS TRANSULITE?

Transulite insulation is a lightweight, resilient blanket made of extremely fine glass fibers bonded together with a thermosetting resin.

It's *unique* because a specially developed binder minimizes moisture pick-up, even under severe operating conditions.

WHAT IS ITS BACKGROUND?

Transulite's background is the research laboratories of L-O-F Glass Fibers Company, where some of the most efficient thermal insulations known have been developed.

These insulations are widely used by the automobile, aircraft, original equipment, industrial construction and home building industries . . . also used in appliances, air conditioning systems, trucks and trailers, metal buildings, mobile homes and many other places.



Transulite



WHAT ARE ITS ADVANTAGES?

Because Transulite is especially designed for the transportation industry it offers:

Superior thermal performance—one of the most efficient on a heat-resistance-to-weight ratio.

Superior resistance to moisture—when tested for 14 days in a humidity cabinet—such as used in the railroad industry for refrigerated cars—total moisture pickup by absorption and adsorption combined was below the maximum permitted by the specifications.

Superior resistance to vibration—the most troublesome over-the-track operating conditions present no hazard. Transulite holds its position . . . resists sagging or settling when properly installed.

Superior durability—protects your long term investment because the inorganic glass fibers will not burn, rot or sustain rodents and vermin.

Transulite's extreme light weight adds very little to overall unit weight . . . permits increased payloads . . . makes it easier to install! Rolls are pleasant to handle and are compressed to require less storage space.

WHERE IS IT USED?

Transulite performs best where the requirements are the most exacting. Its superior thermal performance and resistance to moisture make it the ideal insulation for refrigerated cars.

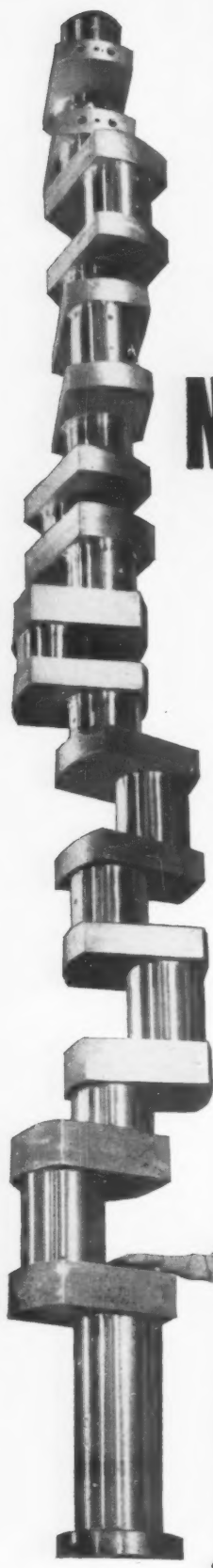
Transulite, as well as Super-Fine, Microlite and Microtex, other products of L·O·F Glass Fibers Company, answer insulation problems for passenger cars, box cars, tank cars and cabooses.

Available in thicknesses and densities to meet specific requirements. Widths up to 120".

For more information about Transulite and how it helps to solve insulation problems, write to: L·O·F Glass Fibers Company, Dept. 56-78, 1810 Madison Avenue, Toledo 1, Ohio.

L·O·F GLASS FIBERS COMPANY

TOLEDO 1, OHIO



18,000 POUND CRANKSHAFT REBUILT BY NATIONAL FORGE SPECIALISTS

While National Forge specializes particularly in locomotive crankshafts, this 23-foot 2-inch compressor crankshaft was just another routine reconditioning job.

When this shaft arrived at National Forge, we made a thorough visual and magnetic particle inspection. After the shaft was found to be salvageable, all the bearing surfaces were prepared for chromium plating by grinding and grit blasting.

A unique plating machine deposits the chrome uniformly smooth to a pre-determined thickness—and away from fillet areas. After re-grinding—held to a minimum by accurate plating—the shaft was then finished ground and polished to the original specifications.

No other plating company has National Forge's experience in handling both new and rebuilt crankshafts. So, why not try National Forge Specialists on your next crankshaft rebuilding job?

Write for Bulletin RC-1.



**NATIONAL
FORGE** & ORDNANCE
COMPANY

IRVINE, WARREN COUNTY, PA.

Supply Trade Notes

(Continued from page 19)

UNITED STATES STEEL CORPORATION.

—*Alfred Hoagland* appointed supervisor, service metallurgy, railroad materials and forgings.

AMERICAN STEEL & WIRE DIVISION.—*Edward A. Murray*, sales manager, Chicago district, appointed assistant vice-president of sales at Cleveland, replacing *M. D. Millard*, now administrative vice-president at Pittsburgh.

STANDARD RAILWAY EQUIPMENT MANUFACTURING COMPANY (CANADA) Ltd.—*R. G. Hudson* appointed vice-president and general manager.

OLIN MATHIESON CHEMICAL CORPORATION.—*Charles B. Brown* has been appointed manager, transportation industry sales, Aluminum division.

M & J DIESEL LOCOMOTIVE FILTER CORPORATION.—Chicago office of M & J moved to the Inland Steel Building, 30 West Monroe street, Chicago 3.

ARONSON MACHINE COMPANY.—*William L. Fisher* appointed eastern district sales manager; headquarters, Philadelphia area.

EVANS PRODUCTS COMPANY.—*James J. Chavis* appointed regional manager of the new South Central Regional office in St. Louis, Mo.

STANDARD RAILWAY EQUIPMENT MANUFACTURING COMPANY.—Executive and Chicago sales offices moved from 310 S. Michigan avenue to the Borg Warner building, Michigan avenue and Adams street.

GRIFFIN WHEEL COMPANY.—*R. H. Wellington*, general sales manager, appointed assistant to president.

DIESEL INJECTION SALES & SERVICE, INC.—Diesel Injection Sales appointed exclusive distributor in the United States for *Leslie Hartridge, Ltd.*, of England, manufacturer of fuel injection test and service equipment.

DUFF-NORTON COMPANY.—*Donald J. Wallace* named district sales manager; headquarters, New York. Formerly eastern district sales manager for the Coffing Hoist Division.

CRUCIBLE STEEL COMPANY OF AMERICA.—*John J. Bollinger* appointed western manager of Spring Division sales, at Cleveland, succeeding *William M. Stevenson*, retired after 50 years of service.

All metals research, development and metallurgical activity combined in a new Technology Department at Pittsburgh. *Dr. M. J. Day*, vice-president, Research and Development, now vice-president-technology.

Obituary

I. S. ACWORTH, assistant vice-president, General American Transportation Corporation, died on June 3 at the Illinois Masonic Hospital, Chicago, after a long illness.



Now...ASF Palletizes Coupler Knuckles at No Extra Cost!

There's just no comparison between the new, trim, 24-knuckle pallet and the old, time-wasting heap of knuckles. Everything about palletizing makes handling easier.

Unloading is easy and quick, with crane, magnet or lift truck. Knuckles are firmly banded to pallets, which can be stacked safely and neatly to any practical height—saving floor space. At inventory, simply count the *pallets*—24 knuckles at a time.

Palletizing at no extra cost is another way of demonstrating how ASF is constantly looking for ways to cut *your* stores costs. Specify these easy-to-handle knuckles—in multiples of 24!



American Steel Foundries

Prudential Plaza, Chicago 1, Illinois

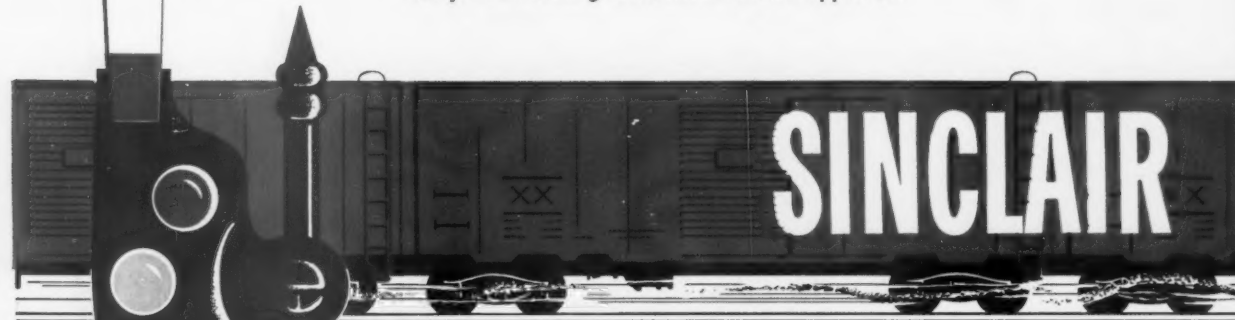
Canadian Sales: International Equipment Co., Ltd., Montreal 1, Quebec
Other Foreign Sales: American Steel Foundries, International, S. A., Chicago



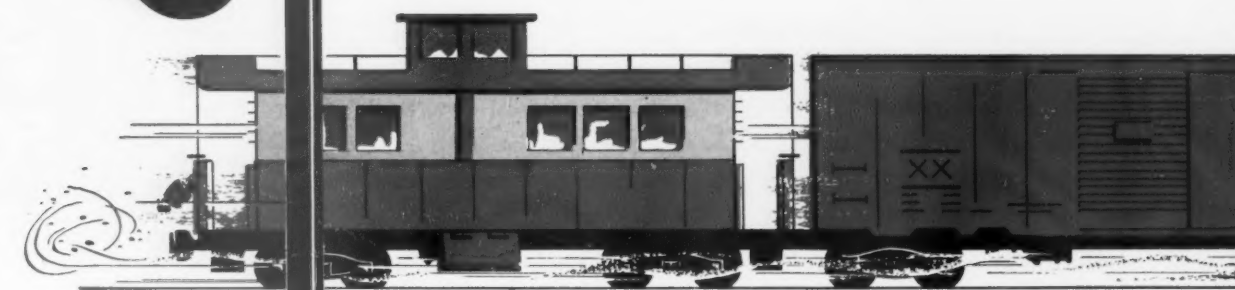
Today, more than 100 U. S. railroads prefer Sinclair GASCON® OILS. Only a tried, tested and outstanding oil could make and *keep* a record such as this.



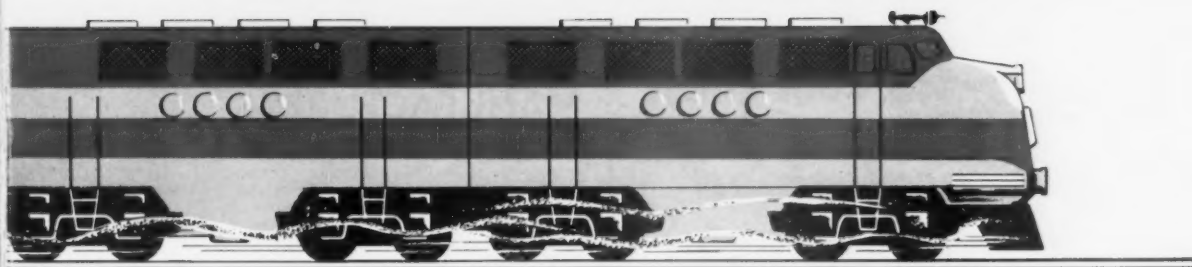
Proved superior for Diesel locomotive and car journal bearing lubrication. A.A.R. approved.



Unsurpassed for heavy-duty work in Diesel traction motor gears.



Only Sinclair Diesel Fuel contains the amazing rust inhibitor RD-119®. Used regularly, it effectively *stops* damaging rust and corrosion in fuel systems.



SINCLAIR RAILROAD LUBRICANTS
...for Superior Diesel Performance

SINCLAIR REFINING COMPANY • RAILWAY SALES • NEW YORK • CHICAGO • ST. LOUIS • HOUSTON

Now! a **Snap-on** Tool Chest

**assembled
to your order**



← **KR-58A Tool Chest**
26" x 12" x 14" high

← **KR-421 Drawer Section**
26" x 12" x 8" high

← **KR-352 Roll Cab**
26 1/4" x 18" x 30" high

Snap-on KR-360
Triple-Unit Tool Cabinet

RAILROAD SPECIALISTS — IN TOOLS, IN SERVICE

Your Snap-on railroad representative is trained and experienced to aid in the selection, use and care of the tools needed on your line. He can also keep you up to date on the latest Snap-on special railroad kits and tools — for timesaving use in the shop or yard. Give him a call.



New Changeable Drawer Combination

This new Snap-on tool chest (top section) with changeable drawer combination actually lets you design your own tool chest. You can select all deep drawers, all shallow drawers or a combination of deep, shallow, and medium-depth drawers — get just the right combination for your own particular tools. And you can make future changes to fit your needs.

The new Snap-on drawer (center section) is also available with the changeable drawer feature. Two shallow drawers can be substituted for the deep drawer or a deep drawer substituted for the two shallow drawers.

The Snap-on roll cab (bottom section) gives you a tool chest on wheels. And you get all the built-in quality of Snap-on chests — heavy-gauge steel, closely spaced electric spot welds, extra-strong internal bracing and supports. All drawers are non-sag, non-spill, easy-running units with full-width, roll-type pulls for easy opening from any angle.

SNAP-ON TOOLS
CORPORATION

Railroad Division

8130-G 28th Avenue • Kenosha, Wisconsin

HELPS FROM MANUFACTURERS

The following compilation of literature—including pamphlets and data sheets—is offered free to railroad men by manufacturers to the railroad industry. To receive the desired information write direct to the manufacturer.

"CUT YOUR FLAME-CUTTING COSTS."

12-page Form 1057 describes six ways in which Oxxweld nozzles cut gas consumption and nozzle replacement. (Write: *Linde Company, Division of Union Carbide Corporation*, Dept. RLC, 30 East 42nd st., New York 17.)

CLEANING OF AIR CONDITIONING

EQUIPMENT. Service Report B-7370 discusses procedures for the cleaning of air-conditioning equipment in coaches and refrigerator cars. (Write: *Oakite Products, Inc.*, Dept. RLC, 19 Rector st., New York 6.)

WHITING DROP TABLES. 16-page case study shows various steps required with drop tables for fast, economical and safe servicing of diesel and steam locomotives. Features section on pit designs, with detailed drawings of typical installations. (Write: *Whiting Corporation*, Dept. RLC, 15600 Lathrop ave., Harvey, Ill.)

DUCTILE IRON PISTON. 4-page bulletin describes Hunt-Spiller ductile iron piston for the 600 series Baldwin engine. (Write: *Hunt-Spiller Manufacturing Corporation*, Dept. RLC, 383 Dorchester ave., Boston 27.)

SLING CHAINS. 28-page catalog DH-105 describes complete line of ACCO Registered sling chain—1-, 2-, 3- and 4-leg styles, plus necessary hooks and attachments. Recommended working load limits indicated (Write: *American Chain Division, American Chain & Cable Co.*, Dept. RLC, York, Pa.)

"MECHANIZED SQUIRT WELDER." 6-page folder describes the Lincoln ML-3 mechanized squirt welder, a semi-automatic, submerger arc type, guided by hand. Specifications given, also table of comparative welding speeds. (Write: *Lincoln Electric Company*, Dept. RLC, Cleveland 17.)

HOT BOX DETECTIVE. 6-page folder describes how the Servosafet Hot Box Detective is installed at track side and how it inspects and indicates on a chart the relative temperature level of each journal on a train moving past. (Write: *Servo Corporation of America*, Dept. RLC, 2020 Jericho Turnpike, New Hyde Park, L. I., N. Y.)

MOLYKOTE. Bulletin No. 115 (3 1/4 in. by 4 1/2 in.) covers in detail, preparation of metal surfaces for the proper application of Molykote resin bonded lubricant coatings. Includes instructions for degreasing all metals; phosphating of stainless steels; sandblasting of chrome plate, nickel plate and stainless steel; anodizing of aluminum and aluminum alloys, etc. Application of the coating, either by spraying or dipping, and required baking times covered in detail. (Write: *Alpha-Molykote Corporation*, Dept. RLC, 65 Harvard ave., Stamford, Conn.)



Here's proof that **WIPING WASTE** absorbs over four times as much oil as cloths!

...certified test report available on request

In precise, scientific tests conducted by a prominent Chicago engineering firm, cotton wiping waste and wiping cloths were compared to determine their absorptive qualities. Samples were tested under identical, controlled conditions. The carefully tabulated figures prove once and for all that wiping waste absorbs 443% as much oil as the same amount of wiping cloth! The complete report of these tests has been prepared and is available free upon request. Use the convenient coupon below.

Actually these new tests only bear out old facts already known to most users of wiping waste. Wiping waste, consisting of all new, uniform threads, is by its very nature more consistently efficient. What's more, since good quality wiping waste can be purchased at a much lower initial cost per pound than proper quality wiping cloths, waste is considerably cheaper to use.

All in all, it adds up to one thing: You'll get more efficient performance, at lower cost, by switching to cotton wiping waste.



INSTITUTE OF THREAD MACHINERS, INC.

84 Field Point Road
Greenwich, Connecticut

Institute of Thread Machiners, Inc.
84 Field Point Road
Greenwich, Connecticut
Dept. RL-2

Gentlemen:

Please send me a copy of your engineering test report on cotton wiping waste.

Name

Organization

Address

City Zone State

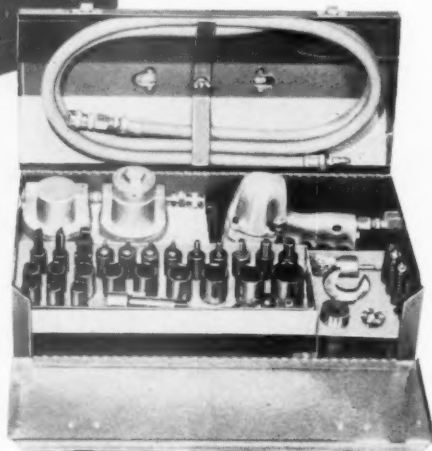


Electric Impact Wrench
UL and CSA approved

TWO NEW KITS

Air-powered
Model MM-43
illustrated at right

Electric-powered
Model MM-40
not illustrated



Save on locomotive maintenance with new Remington Impact Wrench Kit

OTHER DEPENDABLE REMINGTON POWER TOOLS



Air Small-Wheel Grinder, Model PG-2022L
—Wheel diameter, 1" vitrified, 1 1/2" organic;
speed, 22,000 rpm at 90 psi.; equipped with
regulator; length 10 1/4"; wt.: 1 1/4 lbs.



Air Drill, Model PD-328P—1/2" capacity,
air-powered; speed, 575 rpm at 90 psi.; built-
in oiler and speed regulator, ball bearings
throughout, with geared chuck and key.



Electric Flexible Shaft Machine, Model
BFGP—3-hp induction motor, totally en-
closed, dustproof; geared drive delivers
4,500 rpm for grinding, sanding, wire brushing.



Air Circular Saw, Model P128—12"
blade cuts full 4 1/2"; cuts 3 1/2" at 45°;
blade guard; safety trigger switch. Complete
with blade, case and hose.

Here's a new concept for im-
proved worker efficiency—a
multi-purpose power tool
that can save costly man-
hours in maintenance. The
new Remington Mechanics
Maintenance Kit features a
reversible impact wrench—
air or electric models avail-
able—plus special accesso-
ries that handle drilling,
screwdriving and wire
brushing as well as bolting.
Each kit is portable and *com-
plete*—air kit includes filter-
lubricator and 15-ft. hose.
On-the-job tests prove kits
do maintenance work sig-
nificantly faster.

Remington

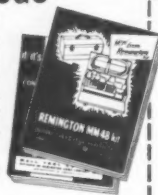
MALL TOOL COMPANY

Division of Remington Arms Company, Inc., Bridgeport 2, Conn.
In Canada: Mall Tool, Ltd., 36 Queen Elizabeth Blvd., Toronto, Ontario

Choose the power most efficient for
you. Remington power tools are made in
**AIR, ELECTRIC OR GASOLINE-
DRIVEN MODELS**

FREE CATALOGS

Send for free illustrated
booklet on Mechanics
Maintenance Tool Kit
giving examples of sav-
ings. Also available: a cat-
alog on complete line of
Remington Contractor
and Industrial Tools.
Mail the coupon—there
is no obligation.



Mall Tool Company
Division of Remington Arms Company, Inc.
Bridgeport 2, Conn.

Please send me without obligation your FREE booklets on:
☐ Remington Mechanics Maintenance Tool Kit;
☐ Remington Contractor and Industrial Tools.

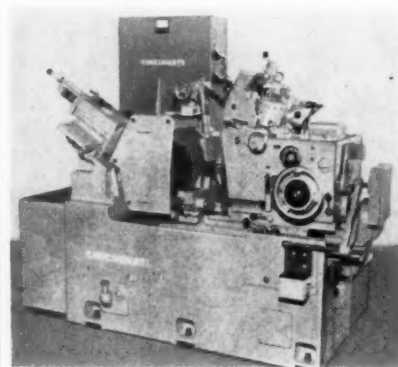
Name _____ Position _____
Company _____
Address _____
City _____ Zone _____ State _____

What's New

(Continued from page 12)

journal. The wicks are made from a blend of nylon, wool and cotton yarn, selected to provide optimum oil delivery, wick-rise rate, abrasion resistance, aging properties, and chemical stability.

Read tests have shown that Cool-Pak allows a journal to run as much as 17 per cent cooler than loose packing. The manufacturer reports this is true because Cool-Pak exerts relatively light pressure on the journal, and the looped wicking arrangement provides a free air space which aids in dissipating journal heat. Cool-Pak has been approved by the AAR for test application. *Uni-Pak Corporation, Dept. RLC, Box 8302, Swissvale, Pittsburgh 18.*



Centerless Grinding Machines

Cincinnati centerless grinders Nos. 2 and 3, rated at 15 hp and 25 hp, have been im-
proved. Grinding wheel truing controls are now located at the left-hand end of the bed for added convenience, and the bed is 5 in. longer, to provide support for these grinding wheel truing units.

New grinding fluid control, consisting of new deflectors within the wheel guard and a new three-way adjustable nozzle, eliminate splashing and more effectively floods the work. A greater selection of accessory equipment is now available. One is the vari-pitch unit for hand infeed grinding equipment. A precision indicator attachment for rapid, visual taper correction is also available. *Cincinnati Grinders Incorporated, Dept. RLC, Cincinnati 9.*

Insulating Tape

A Class B pressure-sensitive electrical tape, Scotch No. 55, combines the mechanical strength of a non-woven polyester web and the electrical properties of a polyester film. It consists of a non-woven polyester film laminated to a polyester film and coated with a true thermosetting, pressure-sensitive adhesive.

The tape is used in splicing lead wire con-
(Continued on page 56)

Too much brush breakage?



These switchers were death on brushes

... 'til the road tried



NATIONAL

TRADE MARK



M. HENIKA

The road switching locomotives of this railroad were breaking hundreds of brushes per month, says "National" Carbon Brush Man Morgan Henika.

Source of the trouble was severe vibration caused by widely varying operating conditions. Morgan recommended "National" brushes grade DE-3 for their special shock-resistant qualities.

RESULT: in the next twelve months, not one report of brush breakage.

Trouble-shooting is a specialty of "National" Carbon Brush Men serving the nation's railroads. The men's training, backed by National Carbon's *long term brush development*, make them your best consultants.

Call your "National" Carbon Brush Man or write to National Carbon Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, N. Y.



"National", "N" and Shield Device, and "Union Carbide" are registered trade-marks of Union Carbide Corporation
NATIONAL CARBON COMPANY • Division of Union Carbide Corporation • 30 East 42nd Street, New York 17, N.Y.
 Sales Offices: Atlanta, Chicago, Dallas, Kansas City, Los Angeles, New York, Pittsburgh, San Francisco. In Canada: Union Carbide Canada Limited, Toronto.



NEW! A 35 Ton Hydraulic Journal Jack

First in the Industry!

You asked for it and here it is—a brand new jack designed and built especially for servicing heavier freight cars. It can raise 35 tons 6 inches—is only 9.7 high—weighs but 55 pounds. With the 35H9.7, the job of inspecting and renewing journal brasses can now be done without the danger of overloading a lower capacity hydraulic journal jack—and the work can be done faster with less effort! If you have the problem of lifting heavy cars, we suggest you get complete details on this new 35 ton hydraulic journal jack immediately. Write the world's oldest and largest manufacturer of lifting jacks for bulletin AD-16-G.

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Ratchet, Screw,
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nections, for lead saddles and pads, strapping, coal covers, interlayer insulation, slot edging and other Class B applications. It is particularly suited for uses requiring maximum tear strength and excellent physical strength, and is non-corrosive. *Minnesota Mining & Manufacturing Co., Dept. RLC, St. Paul 6, Minn.*



Threadless Aluminum Stud Cap

Designed specifically for installing insulation, this threadless aluminum-alloy stud cap has a positive interference lock on the special threadless steel studs. The studs have either $\frac{1}{8}$ -in. or $\frac{3}{16}$ -in. nominal diameter, and a variety of shank lengths are provided to permit application over a broad range of material thicknesses.

The studs with which the Huck caps are used are not threaded, but have annular grooves. The cap is installed by tapping it onto the stud with a hammer. *Huck Manufacturing Company, Dept. RLC, 2480 Bellevue Avenue, Detroit 7.*

Rust Solvent

This fast acting penetrant and rust solvent, "Spray Nuts-Off," is designed to loosen everything rusted or corroded. The product is a combination of oils, penetrants and rust solvents. It cleans small parts such as spark plugs, battery terminals and carburetors. Spray Nuts-Off has no offensive odor and is packaged in a 12-oz Aerosol container and in pint and gallon containers. *Spray Products Corporation, Dept. RLC, P.O. Box 584, Camden 1, N. J.*



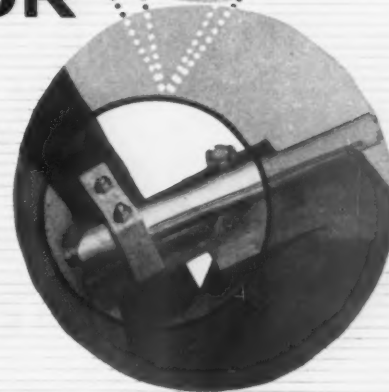
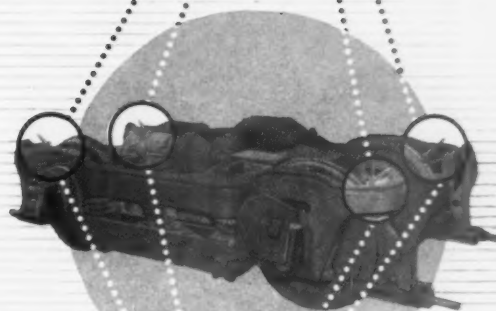
Battery Packaging

Exide-Ironclad MGD diesel locomotive cranking batteries are now packed in corrugated boxes, instead of wood crating. Batteries shipped in 1,600-lb palletized foursomes can

EXTEND

LOCOMOTIVE WHEEL LIFE

30% TO 300%!



WITH

Nalco

TYPE
TA

FLANGE
LUBRICATOR

USING *Nalco* "MOLY" STICKS

Nalco "Moly" Stick is a highly-efficient dry lubricant that maintains a lubricating surface between locomotive wheel flanges and track under extremes of pressure and temperature . . . without *picking up dirt and sand to form a grinding compound*. In new Nalco Type TA Lubricators, "Moly" Sticks provide automatic flange lubrication that has extended wheel life from a substantial 30% to as much—particularly on

yard locomotives—as a whopping 300%!

Cost of Nalco Type TA Lubricators and "Moly" Sticks is small. Maintenance is limited to occasional stick replacements. Complete installation of lubricators on a diesel unit can be done by your shop personnel in four hours or less.

Call or write for details on the simplicity and continuing economy of Nalco Flange Lubrication for your locomotives.

NATIONAL ALUMINATE CORPORATION
6190 West 66th Place

Portsmouth 7-7240

Chicago 38, Illinois

CANADA: Alchem Limited, Burlington, Ontario

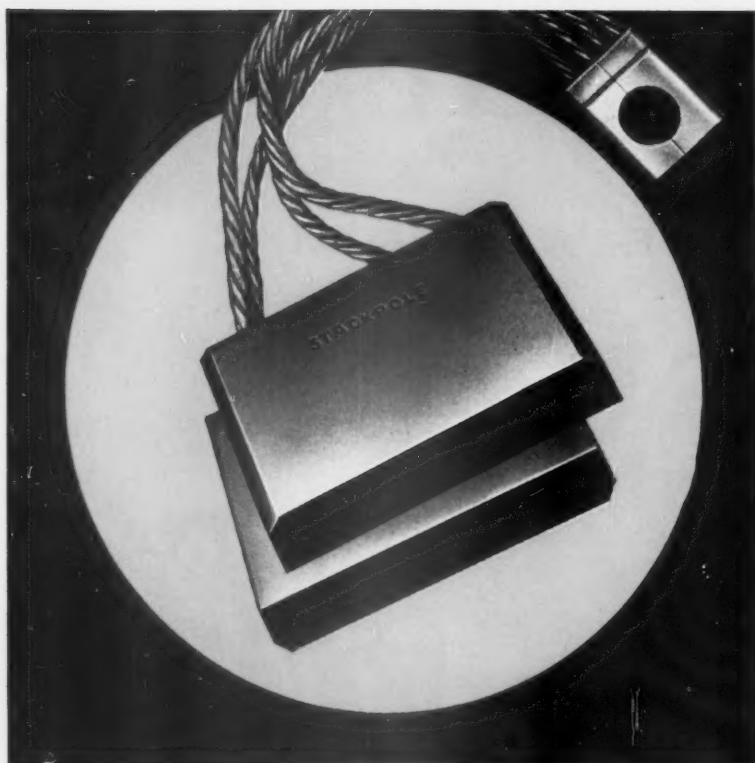
ITALY: Nalco Italiana, S.p.A.

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reasons why
commutator
reconditioning
costs have been
coming down!**

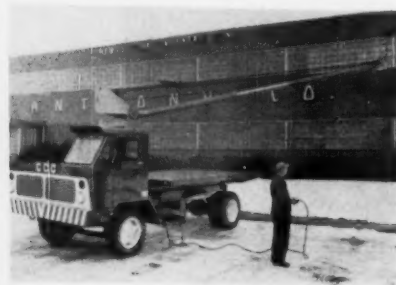
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diesel electric
BRUSHES

for maximum mileage consistent with
smooth, burn-free commutation

STACKPOLE CARBON COMPANY, St. Marys, Pa.

be safely tiered to two or three-pallet height, and freight savings as high as 60 per cent are reported.

The design permits slipping off carbon tops to give batteries a booster charge right in boxes, without unpacking. Drop flaps in the container ends permit easy access to battery lifting-holds. *Exide Industrial Division, Electric Storage Battery Company, Dept. RLC, 12 S. 12th st., Philadelphia 7.*



Remote Controlled Truck Crane

This remote-controlled truck crane enables a single operator to direct the crane at the point of use as well as operate the crane. The remote control system is operated by heavy duty double solenoids. This feature enables the operator to steady the load at the same time that he is operating the controls and is especially useful for long and bulky material. The crane lifts 5,000 lb and fits in an 18-in. mounting space. The boom swings 280 deg. The high pivot point of the boom over the truck bed provides maximum clearance for heavy loads and ample area for rotation of the boom over the cab.

The hydraulic pump that operates the crane is driven by power-takeoff on the truck's transmission. *Anthony Company, Dept. RLC, Streator, Ill.*

Ductile Iron Piston

This ductile iron piston for Baldwin-Lima-Hamilton 600 series engines is designed to replace the standard aluminum piston. High-strength ductile iron combines the wear and heat resistance properties of cast iron with the high strength-to-weight ratio of aluminum. The hardness of ductile iron is 220-250 Brinell, compared to 120 Brinell for aluminum. This provides extra service life in such critical areas as compression ring grooves.

A design change exposes all of the piston crown and compression ring area to oil cooling, which increases the operating life of the piston. A large eastern railroad equipped a locomotive with Hunt-Spiller ductile iron pistons over 3 years ago. Since that time, the locomotive has operated over 100,000 miles mostly in pusher service. When the locomotive was shopped recently, the pistons were found in excellent condition, with no wear on the ring groove lands. There were no stuck or broken rings. *Hunt-Spiller Mfg. Corporation, Dept. RLC, Boston.*

(Continued on page 60)

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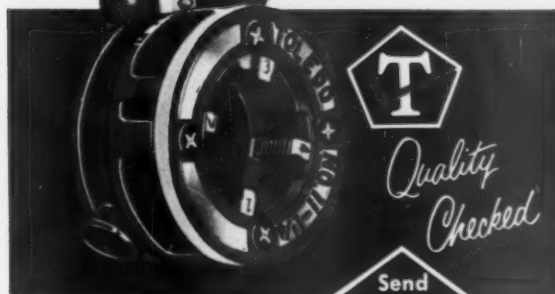


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in a hurry**

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Furnished in three sizes, from 1/8" to 2"
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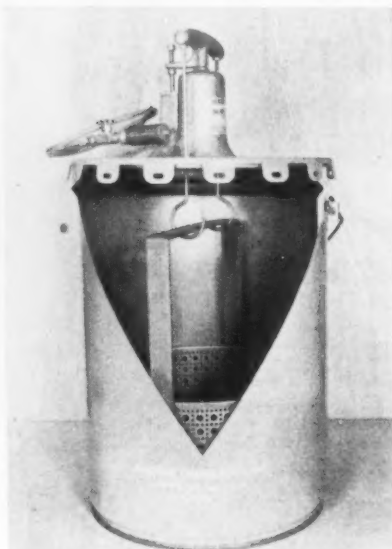
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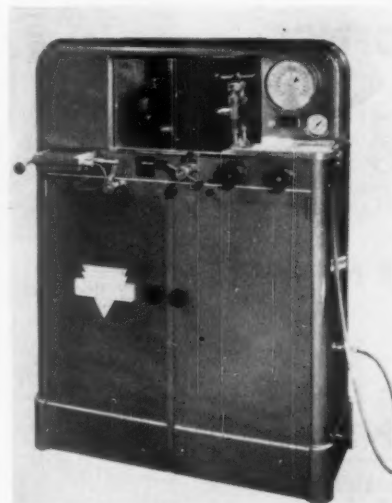
What's New

(Continued from page 58)



Air Powered Parts Cleaner

The Mini-Dip air-powered parts cleaner is a bench type machine, with built-in air motor. It is mounted on the container cover of any standard five, six or 15 gal open-head container and connects to the shop air supply. The basket of parts is agitated up and down 100 times a minute. The Mini-Dip handles up to 50 lb. of parts at a time. Magnus Chemical Company, Dept. RLC, South ave., Garwood, N. Y.



Injector Tester

The Hartridge Universal diesel nozzle analyzer permits the testing of a nozzle during any part of the injection period. It allows observation of needle action throughout the period when it actually lifts and returns to the body seat, and checks the degree of

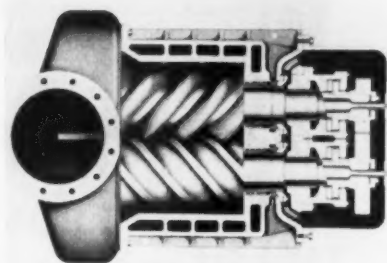
atomization at any part of the injection.

With this analyzer, the injector is tested by the application of a continuous flow of high pressure oil to the nozzle. The rate can be varied from no flow to full demand and maintained at any flow rate.

Other features include a quick-action injector holder, illuminated spray cabinet, combination time and pressure gage, and centrally located controls. Diesel Injection Sales & Service, Inc., Dept. RLC, 808 Union St., Norfolk, Va.

Freight-Car Enamel

This "direct-to-metal" enamel may be applied either by hot or cold spray, requires no primer and, according to the manufacturer, will lower finishing costs and provide greater versatility in finishing methods. The rust inhibitive pigments in it provide a built-in protective coating. Finishes dry to a 3- to 4-mils film built with normal two-pass spraying, and cars may be pounce or spray-stencilled in three to four hours. The enamel is available in black, red and standard railroad colors. Transportation Division, Sherwin-Williams Company, Dept. RLC, Cleveland 1.



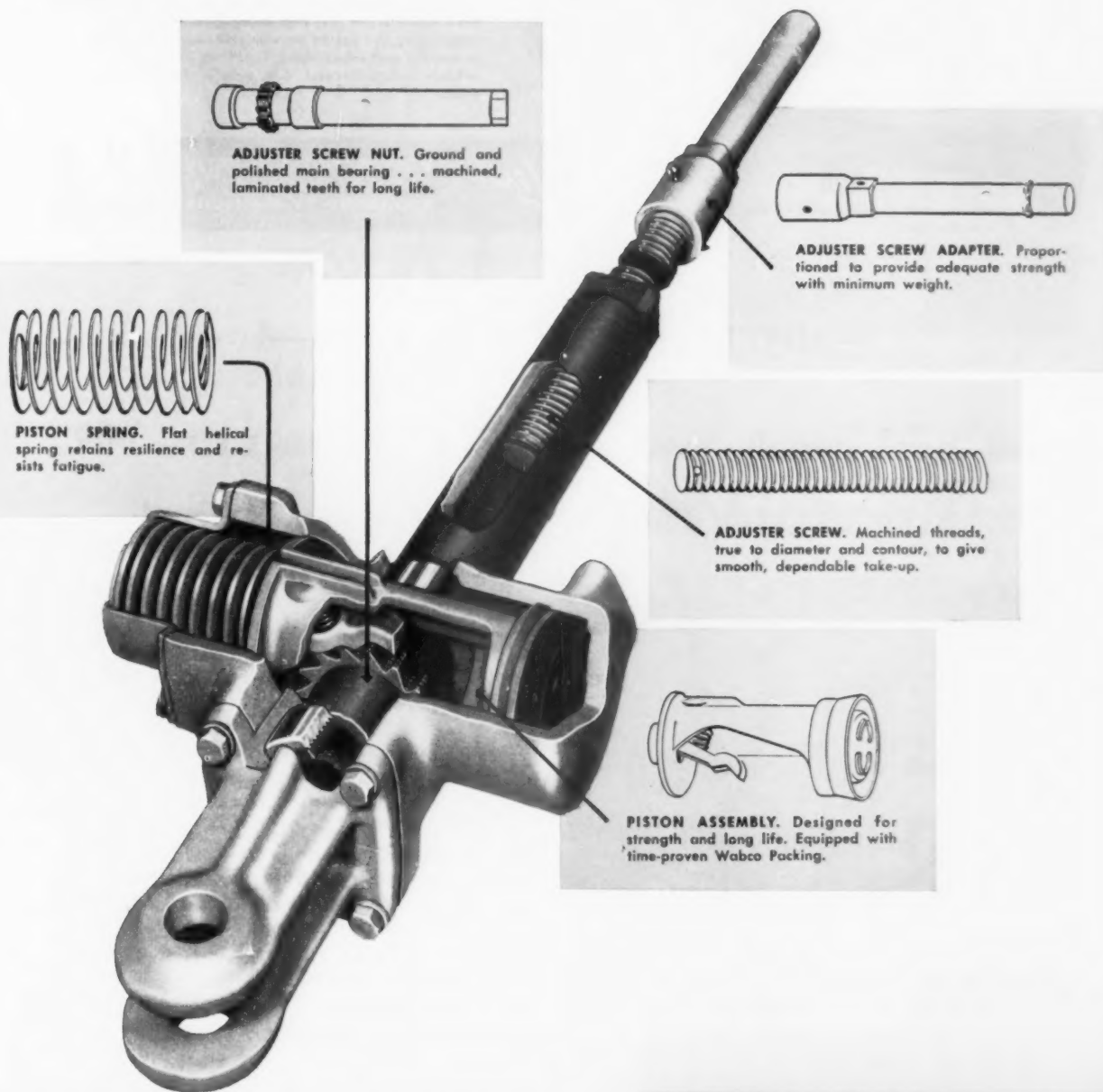
Rotary Compressors

These positive-displacement rotary compressors, designed for continuous heavy-duty industrial service, have a standard capacity range of 800 to 13,000 cfm. Compactness saves floor space and reduces foundation cost.

The compressor is a two-impeller, helical-lobe, axial-flow, rotary machine with four-lobe power impeller and a secondary impeller with six matching gaps synchronized by timing gears. The impellers rotate with a pure rolling motion, and power is transmitted to the secondary impeller through the cushion of compressed gas. Without metal-to-metal contact between impellers or casing, it is unnecessary to lubricate the impellers. The standard compressor casing is a casting cored with water passages for jacket cooling. The single-stage compressors include a range of compression ratios up to 50 to 1 which would permit intake at atmospheric pressure and discharge of 60 psi. The two-stage compressors, with ratios up to 11 to 1 and can develop a maximum pressure of 150 psi.

Because of its high operating speed, the rotary compressor can be driven by an induction or synchronous motor, diesel engine, or steam turbine. Fairbanks, Morse & Co., Dept. RLC, Chicago 5.

Here are the Reasons the Type "D" DOES THE JOB - STAYS ON THE JOB



Each of the simple, rugged operating parts in the Westinghouse Type "D" Slack Adjuster is designed to stand up under long, punishing service. The Type "D" has the same fine engineering you find in Westinghouse Air Brakes . . . the same basic design principle that has been proved in many years of passenger service.

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AIR BRAKE DIVISION **XX** WILMERDING, PENNA.

Westinghouse

Type D

Pneumatic-Automatic

SLACK ADJUSTER

for Freight Cars



**FLUSH FIT
MOISTURE
TIGHT..**

**...WITHOUT
COUNTERSINKING**

All products manufactured in the U.S.A. to A.S.T.M. specification.

Lewis sealite car bolts

Each Lewis Sealite car bolt has special "wood engineering" beveled head for flush, moisture tight, fit... without countersinking. Standard and large-head car bolts have patented fins that grip wood, prevent turning... slotted head bolt can be set with screwdriver. Available in Hot-Dip galvanized finish for "Long Life Economy," in black for low first cost. Call, write or wire for sample prices.

Lewis

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On the Norfolk and Western

**1,968 Cars readied for Tobacco, Flour, Paper, Feed, Grain
loading with *ADM Freight Liner 810***

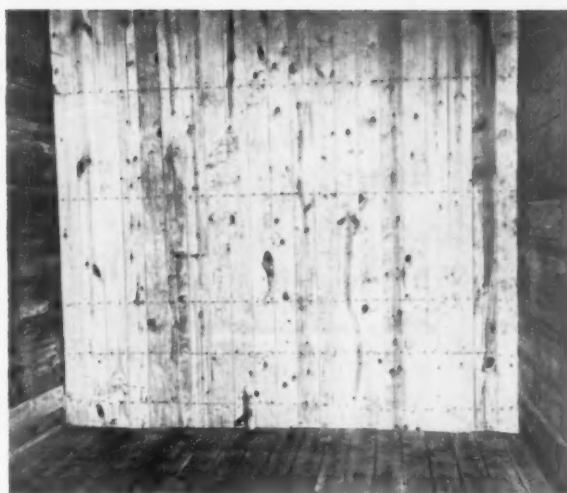
● The Norfolk and Western Railway Company began cooping cars with Freight Liner 810 two years ago. The ADM system was found so satisfactory that the line has since Freight-Lined 1,968 cars for shipment of such commodities as paper, flour, tobacco, feed and grain. Today, the N & W uses ADM Freight Liner 810 at five points along its line.

Like so many roads, the Norfolk and Western finds Freight Liner ideal when sealed, smooth interiors are a must. The plastic-and-fiberglass treatment seals rough or broken walls and corners with a smooth, tough surface that is moisture-proof and easy to clean. Of special interest is its ability to seal grease and oil stains, allowing cars to be used for easily-contaminated loadings.

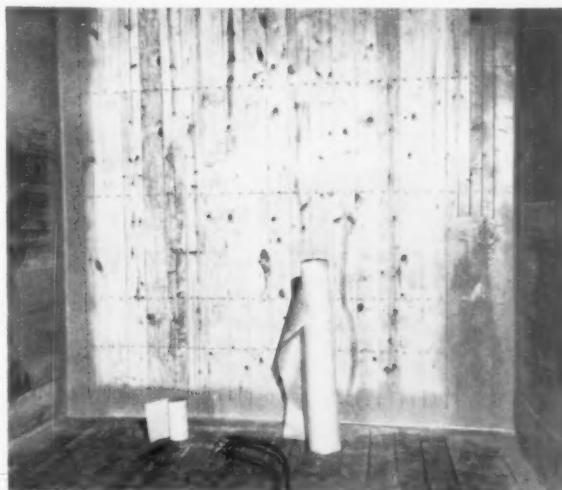
The Pure Food and Drug Administration approves ADM Freight Liner 810 for shipment and storage of foodstuffs.

Freight Liner is popular for other reasons, too. Railroads appreciate its economy, versatility, and ease of application. With a little practice, two men can repair 30 cars a day, patching, relining, and resurfacing. And in most cases, cars can be loaded within three hours after relining.

ADM technical service personnel will be happy to show you how Freight Liner can solve your high-grade loading problems. For a demonstration on your cars at any location, write, wire, or phone ADM Freight Liner System, Archer-Daniels-Midland Company, 700 Investors Building, Minneapolis 2, Minn. (FEderal 3-2112)



Here is before-and-after evidence of the results you get with ADM Freight Liner 810 in boxcars.



Finished job dries in minutes, provides a smooth, tight interior with top-notch sanitary protection.

**Archer-
Daniels-
Midland**

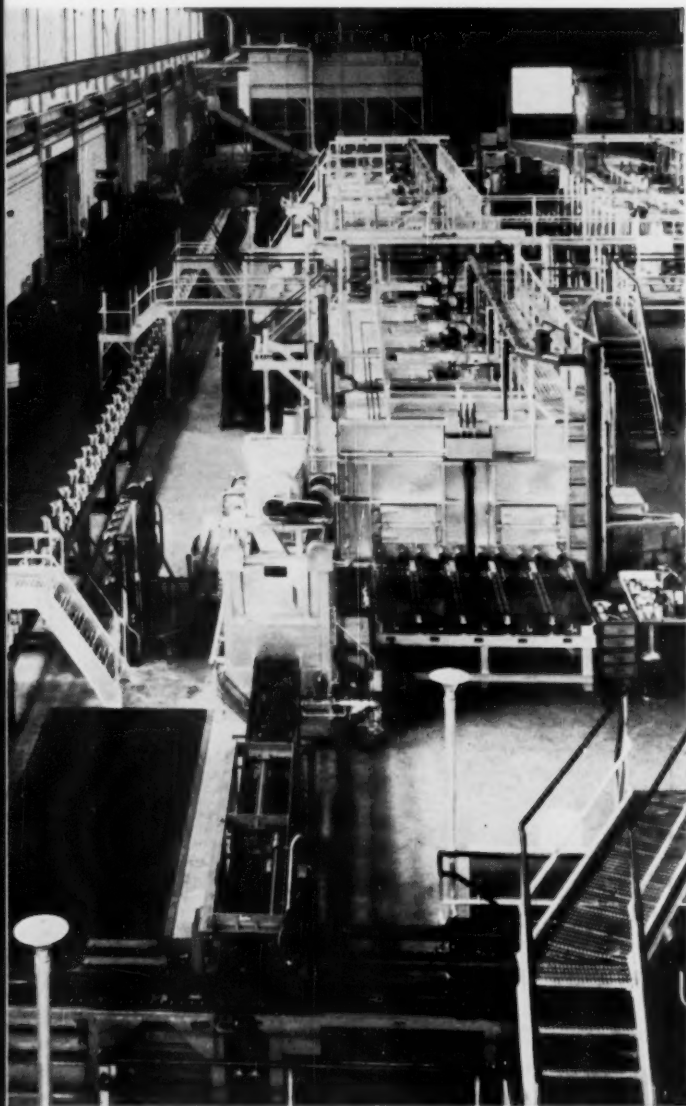


700 INVESTORS BUILDING, MINNEAPOLIS 2, MINN.

ADM PRODUCTS: Linseed, Soybean and Marine Oils, Paint Vehicles, Synthetic and Natural Resins, Fatty Acids and Alcohols, Vinyl Plasticizers, Hydrogenated Glycerides, Sperm Oil, Foundry Binders, Bentonite, Industrial Cereals, Vegetable Proteins, Wheat Flour, Dehydrated Alfalfa, Livestock and Poultry Feeds, Olefins and Hydrocarbons.

New Timken® "AP" bearing production line to help railroads save \$224,000,000 a year

New revolutionary plant, devoted exclusively to making roller bearings for freight cars, can cut bearing costs!



HIGH SPEED production techniques and ultra-modern machines like this boost our output, can lower costs.

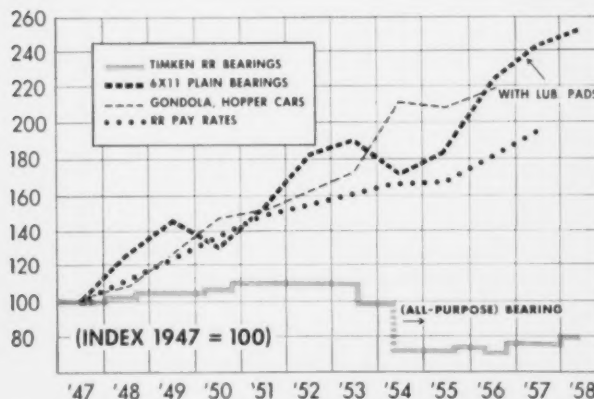
20,000 car-set annual capacity helps the railroads plan purchases of roller bearings, modernize on a regular basis

High uniformity of precision will give railroads still better bearing performance, still greater "Roller Freight" benefits

AN amazing new kind of production line at Columbus, Ohio is turning out Timken® tapered roller bearings for freight cars only. With a capacity for producing 20,000 car-sets a year by missile-age techniques, it's a \$7 million example of the Timken Company's faith in the railroads' future.

Your railroad can make the most of this plant by joining with the other railroads and ordering a specified number of Timken bearings every year. The resulting *planned* production will keep your bearing costs at a minimum—help you plan economical shop schedules that will further reduce the cost of going "Roller Freight". And it will speed the day when all freight is "Roller Freight" — for estimated yearly savings of \$224,000,000 or about \$113 per car in operating and maintenance costs.

Take advantage of your new roller bearing production line by switching to "Roller Freight". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".



HOLDING DOWN COSTS will be the result of this new plant. Chart shows how Timken bearing costs are staying down—other railroad costs going up. Buy new Timken "AP" bearing assemblies from this plant and keep your bearing costs down.

TIMKEN TAPERED ROLLER BEARINGS

TRADE-MARK REG. U. S. PAT. OFF.

"Roller Freight" is the next great step in railroading

